DOMESTIC ENGINEERING

PUBLISHED EACH SATURDAY
BY

Domestic Engineering (Inc.)

Jno. K. Allen, President and Treasurer.
Elmer Crawford, Vice-President.
Frank P. Keeney, Secretary.
E. D. F. Winslow, Asst. Secretary.

Jno. K. Allen, Editor.

MAIN OFFICES:
49-53 NORTH JEFFERSON STREET, CHICAGO, ILL.

SUBSCRIPTION RATES:

United States, Cuba and Mexico.....$1.00 a year
Canada and Foreign Countries.....$2.00 a year
8 shillings. 8 marks. 10 francs.
Single copies of current issue, 5 cents; copies of back numbers, 10 cents each.

REMITTANCES.—Subscriptions are payable in advance, and remittances should be made by check, Chicago draft, postal or express money order, in favor of DOMESTIC ENGINEERING.

CHANGE OF ADDRESS.—The old address should be given as well as the new, and notice should be received a week in advance of the desired change.

NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of DOMESTIC ENGINEERING on Wednesday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Wednesday of the week of issue, but no proof can be shown.

Entered as Second-Class Matter at the Post Office at Chicago, Illinois, Under Act of Congress of March 3, 1879.

Member of the Chicago Trade Press Association.
Member of the Federation of the Trade Press Associations of the United States.

Whole No. 841. Vol. XLVI. No. 4. Chicago, January 23, 1909.

WHAT IS YOUR NAME WORTH?

Or do you not care if it be valueless, expressing the zero quantity in your town? If you wish it to stand for integrity, judgment and good business sense, then instantly resolve never again to install goods of inferior quality, unworthy of attention from maker, distributer or user. Use none but advertised and branded goods behind which you can stand and upon the makers of which you can depend.

We take very great pleasure in calling the special attention of our plumbing readers to the series of articles which have begun in this issue on **"Roughing-in Stacks and Branches."** This series of articles will be continued until the entire subject of roughing-in the stacks and branches is absolutely covered, so that each step in the operation will be explained and the reason given for taking it. We cannot urge too strongly that persons interested in this series of articles shall **save the papers** which contain it, so that at its conclusion they will have the subject entirely treated. Nor do we need to call attention to the fact that this is a continuation of the subject already treated and **closed, "Roughing-in House Drains,"** which is now published in book form, and can be had for fifty cents upon application to "Domestic Engineering," 49-53 North Jefferson street, Chicago, Ill.

* * *

Men bear a double relation to the businesses at the head of which they stand. The first impression a man may get is that the business is primarily for his personal gain, and, as he is the sole beneficiary, he can treat the business as he wills, either encouraging and developing its growth or throttling and choking it into inactivity. That is a false view. In quite the same degree in which a man is benefited by a business should he be held accountable for its orderly growth. If he lends his name to a concern he is sponsor to it, and should feel a responsibility for the proper up-bringing of his business child. Most men could do more business than they do. There are few so situated that there are not some opportunities for a growth in channels not now being exploited. It is the business man's duty to discover these channels, dredge them out and allow the streams of commerce to flow through them.

* * *

Here is a suggestive thought to the master plumber and fitter: Put a sign in your window reading: **"Nationally advertised articles sold in this store."** A man who tried it says: "I find it pays us well, not only from the standpoint of profits earned, but we believe it gives our store prestige in other ways, bringing people to our store that we would not reach in any other way. I believe if more merchants would take up the matter in the same way we have they would obtain results that would surprise them."

* * *

Buy now. Please do not forget the unpleasant details of the time not so very long ago, when manufacturers or jobbers could not fill your orders. If you are foresighted, look over your stock, and if there are any weak points in it strengthen them. Buy now, and give an impetus to your own business, as well as that of the jobber and manufacturer. Do not wait to be pushed. Get in the game.

* * *

We have bought the copyrights and plates for Dean's "Steamfitters' Computation and Price Book" ($3) and "Dean's System of Greenhouse Heating" ($2), and orders can be sent directly to us.

Hot Water Heating for Apartment Houses and Office Buildings—V*

By Chas. L. Hubbard

A combination system of hot-water and steam heating requires a steam boiler, equipped with the usual gauges, cocks, damper, regulator, etc., and a system of piping adapted to hot-water circulation and radiators of the hot-water type.

The addition of an expansion tank is required, which must also be so arranged that it can be shut off when used for steam heating. While this system has many advantages in the way of cost over the complete hot-water system, yet the labor of changing from one system to the other is troublesome, and should the connections with the expansion tank be overlooked when used for hot water, serious results might follow.

Valves. Gate valves are commonly used for the mains and branches and angle valves for the radiator connections. There are several forms of quick opening water valves in common use. It is customary to place a valve only in the supply connection, simply for regulating the flow of water through the radiator. Fig. 13 shows a form of valve by which a single connection can be made with the radiator. The supply enters through the top of the valve, passes through the sections of the radiator, and the return flows out through the lower part of the valve, as shown. A fitting commonly known as a "union ell" is used on the return end.

Air Valves. The air valves in hot-water heating are placed at the top of the last section toward the return end. The ordinary hand pet-cock, operated with a key, is about as satisfactory as any. Hot-water radiators require venting only occasionally, and it is not very much trouble to do it by hand. There are several automatic valves upon the market which give very good results. The only objection to this form of valve is that if for any reason the valve should become stuck while in an open position much damage might be done to floors and ceilings from leakage if not promptly discovered. The most common form of automatic air-valves is similar in construction to a float steam trap. As air collects in the chamber at the top the water-line is lowered and the float drops, and in so doing opens a small valve at the top of the chamber and allows the air to escape. As the water flows in to take its place the float is forced upward and the valve closed. This valve is provided with a stop valve in its connection with the radiator for closing in case of a leakage.

Fittings. All fittings used in making up the mains and branches should, in general, be of the "long turn" pattern in order to reduce the resistance as much as possible. Radiator connections are best made up with short fittings, as the long pattern cannot be used in the limited space available without giving an awkward appearance.

Pipe Sizes.—The size of pipe required to supply any given amount of radiating surface depends upon the temperature of the water, the elevation of the radiator above the boiler, and also upon the horizontal distance from the boiler to the foot of the riser. As the process of working out the pipe sizes for different conditions is one of considerable length, the following table is given for the sizes of supply and return mains. This is for direct radiating surface, and covers lengths of run from 100 to 1,000 feet.

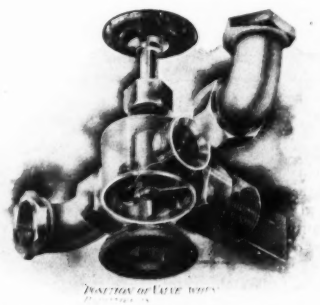


Fig. 13. Showing type of valve by which a single connection can be made with the radiator.

TABLE 1.

Size of Pipe.	Square Feet of Radiating Surface. 100 ft. Run.	200 ft. Run.	300 ft. Run.	400 ft. Run.	500 ft. Run.	600 ft. Run.	700 ft. Run.	800 ft. Run.	1000 ft. Run.
1	30								
1¼	60	50							
1½	100	75	50						
2	200	150	125	100	75				
2½	350	250	200	175	150	125			
3	550	400	300	275	250	225	200	175	150
3½	850	600	450	400	350	325	300	250	225
4	1200	850	700	600	525	475	450	400	350
5		1400	1150	1000	700	850	775	725	650
6				1600	1400	1300	1200	1150	1000
7							1706	1600	1500

These quantities have been calculated on a basis of 10 feet difference in elevation between the center of the heater and the radiators, and a difference in temperature of 17 degrees between the supply and return. This table may be used for all horizontal mains.

*Previous installments of this series of articles were published in the issues of December 26, January 2, 9 and 16. These back numbers can be obtained for 10 cents a copy.

For vertical risers or drops Table 2 should be used. This has been computed for the same difference in temperature, and gives the square feet of direct surface which different sizes of pipe will supply on the different floors of a building, assuming the height of the stories to be 10 feet.

TABLE 2.

Dia. of Riser.	Square Feet of Radiating Surface. 1st Story.	2nd Story.	3rd Story.	4th Story.	5th Story.	6th Story.
1"	30	55	65	75	85	95
1¼"	60	90	110	125	140	160
1½"	100	140	165	185	210	240
2"	200	275	375	425	500	
2½"	350	475				
3"	550					
3½"	850					

When a single large riser is carried to the attic and the radiators on different floors are supplied by drops, the *average elevation* of the whole system must first be determined. If the amount of surface upon each floor is practically the same, we may assume the whole to be located midway between the first and upper floors. For example, in the case of a six-story building we should assume all of the radiating surface to be on the third floor when proportioning the main riser.

When the amount of surface on the different floors varies, the average elevation may be found by multiplying the surface on each floor by its elevation above the boiler, adding these results and dividing the sum by the total radiating surface on all of the floors. The final result will be the average elevation of the system above the boiler.

As the difference in elevation between the stacks and boiler is small in the case of indirect heating, the pipes should be of ample size to offset the slow velocity of flow through them. The following sizes for runs up to 100 feet in length will be found

TABLE 3.

Diameter of Pipe.	Square Feet of Indirect Radiation.
1"	15
1¼"	30
1½"	50
2"	100
2½"	200
3"	300
3½"	400
4"	600
5"	1000

ample for ordinary conditions. Some engineers make a practice of using somewhat smaller pipes, but the larger sizes will be found, in general, to give more satisfactory results.

To be continued. All rights of republication reserved.

Two Points of View.

"Where is Easy street?"

"The optimist thinks it is just around the corner, but the pessimist feels sure that it is located on Mars or one of the more distant planets."—Birmingham Age-Herald.

Roughing-In Stacks and Branches

I

EDITED BY JNO. K. ALLEN

Mem. Am. Soc. Inspectors of Plumbing and Sanitary Engineers; Mem. Royal Sanitary Institute of Great Britain; Assoc. Mem. Am. Soc. Heating and Ventilating Engineers; Hon. Mem. Chicago Architectural Club.

Written expressly for "Domestic Engineering." All rights reserved.

DEFINITIONS AND EXPLANATIONS.

The stacks in a drainage system are the vertical lines of pipe which extend from the basement up through the various floors, and out through the roof; or, as an alternative, are connected to another stack above the level of the highest fixtures on either of the lines. Soil stacks are the vertical lines of pipe which receive the discharges from soil fixtures such as water closets and urinals, although in most cases they receive the waste discharges from other fixtures as well. For instance, in an ordinary dwelling the soil stack of the bathroom receives, in addition to the discharges from the water closet,

This explains the use and purpose of soil, waste and vent pipes

all waste water from the lavatory and bath tub or other fixtures in the room. Waste stacks, on the other hand, never receive discharges from water closets or other soil fixtures, but are confined to discharges of waste water from other types of fixtures. The best example of a waste stack that can be given is the stack in apartment buildings and flats which receives the waste water from the laundry trays and kitchen sinks on the various floors.

Vent stacks are vertical lines of pipe extending up through the several floors of a building and connected to the soil stacks, or waste stacks, below the level of the lowest fixture discharging into them. In some cases the vent stack is again connected to the accompanying soil or waste stack above the highest fixture discharging into the line, while in other cases the vent stack extends separately through the roof. Vent stacks do not receive the discharges from any kind of fixtures, but, as the name would imply, are special vent pipes, to ventilate the drainage system, and provide a supply

of air to traps, when subjected to siphonic action, to keep them from losing their seals. In a certain class of plumbing installations, known as the two-pipe system of plumbing, a special vent stack accompanies each soil stack and waste stack in the building. In addition to the vent stacks proper, that portion of all soil stacks and waste stacks from above where the highest fixture is connected to them to where they terminate above the roof, is known as a vent stack. It will thus be noticed that each soil stack is a combination of a line of vertical soil pipe, terminating in a vertical line of vent pipe; while each waste stack is a combination of a waste line and a vent line. On the various floors of a building where fixtures are to be located there are horizontal or nearly horizontal branches of pipe extended to the various fixtures. Branch pipes from a water closet or from a urinal to the soil stack are known as soil pipes or soil pipe branches, while the pipes from other fixtures, such as bath tubs, lavatories, showers and sitz baths, to the soil stacks, are known as waste pipes. It will thus be noticed that not only do soil pipes discharge into soil stacks, but waste pipes also discharge into soil stacks. Further, waste pipes may likewise discharge into soil pipes, and from the fixtures to which it is connected to where it joins the soil pipe, the line is known as a waste pipe, while from there on the combination is a soil pipe. The horizontal branch pipes from waste stacks are distinctly waste pipes, and are such whether they discharge directly into the waste stack, or into another waste pipe which in turn empties into the waste stack.

Vent pipes are the horizontal branches from vent stacks and from vent pipes. In speaking of the horizontal branches of soil, waste and vent pipe, it might be well to point out that the pipes are not necessarily horizontal. For convenience they are spoken of as horizontal, although they really include any branches taken off from the stacks at the various floors, regardless of whether they are run horizontally, vertically or at an angle, as they oftentimes are.

THE TWO-PIPE SYSTEM OF PLUMBING.

The ground work of the two-pipe system of plumbing does not differ from the one-pipe system of plumbing. It is only in the vertical stacks of soil, waste and vent pipes, and in the branches to and trapping of fixtures, that the two systems differ. The chief characteristics of the two-pipe system of plumbing, so far as they relate to the vertical stacks of soil, waste and vent pipes, are shown in Fig. 1. In this system the main soil or waste stack *a* rises straight and direct as possible from the house drain to its outlet above the roof. The vent stack *b*, on the other hand, instead of starting from the horizontal house drain, is connected to a Y branch in the vertical stack, below where the lowest fixture on the stack discharges into it. There is no good sanitary reason why the vent stack should not drop clear down to the horizontal drain, but no advantage would be gained by such a construction, while at the same time it would require more material. For economic reasons, then, the vent stack is connected to the accompanying soil or waste stack, below where the lowest fixture is connected to the line; from this point the vent stack rises straight and direct as possible, and usually paralleling the accompanying soil or waste stack, to a point well above the outlet to the highest fixture discharging into the line. At this point the vent stack may be reconnected to the accompanying soil or waste stack, as shown in the illustration, or the vent stack may be continued separately through the roof as shown by the dotted lines. The only reason for connecting the vent stack to the soil or waste stack above the highest fixture is to economize materials. If for any reason, therefore, it be cheaper to extend the vent line separately through the roof it will be better to do so. It will be noticed that at each floor of the building, where an outlet is left in the soil or waste stack, a corresponding outlet is left in the vent stack so that branch connections can be run to each of the several fixture traps to be back-vented.

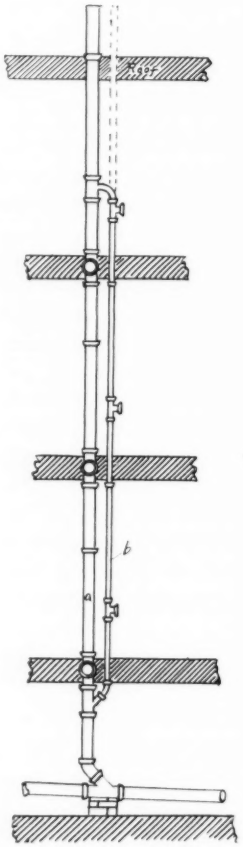
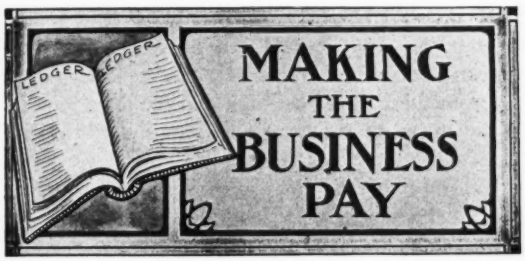


Fig. 1. Vertical stacks of soil, waste and vent pipes.

It will be further noted that the main stack extends through the roof of the building, where it

has an outlet opening to the atmosphere. This outlet is to provide a circulation of air through this stack of the drainage system, to keep the air within comparatively pure and free from the accumulation of gases of decomposition and fermentation. In the event of a main-drain trap being used in the drainage system, a fresh-air inlet must be supplied and a plentiful supply of fresh air will be admitted through this inlet to dilute and sweep out the air in the soil, waste and vent stacks. When no main-drain trap is interposed in the drainage system, air will be drawn into the main street sewers through the vent inlet and will pass through the various drainage systems throughout the city and escape from the numerous vents above the roof. In either case there will be a constant circulation of air through the systems which will keep the air within comparatively pure, so that if a leak should occur the escaping air would not be injurious to the inmates of the building.

To be continued. All rights of republication reserved.



Letters from a Retired Successful Plumber and Steamfitter to His Nephew, Still in Business

XVI*

Written expressly for "Domestic Engineering." All rights reserved.

How to Use the Trade Paper.

Dear Jim:

Back in '91 I got come up with in a way that I deserved, and now, nearly twenty years after, I can appreciate the incident at its full worth.

To begin with, one frosty afternoon in February a fellow dropped off the freight and wanted to sell me a year's subscription to a trade paper. Well, things had been going wrong all day and I was in a hurry to get at a job where the pipes had frozen up, and a few other things were pressing. So I was rather short.

Said—rather impressively, I guess—that I was used to getting my facts mostly first hand; had subscribed to two or three trade papers and found 'em mostly puffs for advertisers—all that sort of stuff. The young man saw how things were, so he said when I'd "reformed" and wanted to come into the fold, they'd be right and proper glad to have me. Left a blank and some advertising matter for my consideration.

Well, that advertising matter laid around the shop for as much as two or three weeks without getting even a thought. I was too busy thawing out pipes.

Finally, I heard through a traveling man that Cy Ives, down at Decorah, was having splendid results with the plumbing he'd put in. Winter of '91 was a bad one, but that didn't make any difference with Cy's work. Fourth of July or Christmas was the same to the pipes Cy laid. So it just naturally struck me that the best thing I could do was to go down to Decorah and get Cy's secret and see if I couldn't improve the Burton standard by grafting on some of Cy's exact and practical information.

As connections by railroad were so poor, I had to drive—twenty miles down—twenty back. And weather—'twas worth fifty dollars an hour to be out in such a storm. Then, when I got there, Cy was out of town. His boy was gone, too—and Cy's foreman didn't seem to think that he had license to tell anything about the business—which he hadn't.

So your Uncle John hung around Decorah for a day or so, and came back home pretty much disgusted over the trip. It had cost, at least calculation—

Use of rig	$ 3.00
Time of self	5.00
Stabling and horse feed	.50
Board, self	1.50
	$10.00

And all I had to show for the trip was the company of the team I'd driven!

Then, when I'd got back to the shop and happened to look at the advertising matter the solicitor had left, there was the full write-up of Cy, his shop, and three whole pages giving just the exact information I'd wanted!

There, that number had been *given* me—regularly it cost ten cents—and when I'd foraged out to get a part of the information in it I'd been set back ten dollars, and come home without the knowledge I'd gone after!

'Course I hardly need tell you—when I realized how bad the joke was on me—that I tried to do the right thing. I took the subscription blank and

*Previous letters in this instructive series were published in the issues of May 23, June 6 and 27, July 11 and 25, August 8 and 22, September 12 and 26, October 10 and 24, November 14, December 5 and 26, and January 9. These back numbers can be obtained for 10 cents a copy.

filled it out for each man in the shop—not forgetting the helper—and sent it in with the money.

And from that incident has grown up a friendship—somewhat personal it may be—between the trade paper and myself. I think of my trade paper as a big, generous, open-hearted, powerful friend, gathering information from the four quarters of the globe and laying it down each week before me.

Some of us older men—and sometimes, I think, some of you younger ones, too—still have the old idea of the trade paper. The old trade paper was about as much like the paper of today as a road cart is like an automobile. Some were good; more were not. Those that were good did not have the opportunity for getting information that even the least important paper now enjoys. The poor ones, as you remember, devoted their columns much to "writing up" those who would buy a certain number of papers for distribution.

This tells how to make the most effective use of the Trade Paper

Those days are long, long past. The trade journal of today is in relentless pursuit of facts, facts that the patron can use to make him better, his business better—to make the world a better place and you a better part of it. And the trade paper goes at it the right way; not by preaching generalities, but by giving plans and specifications—regular blue prints for success.

I often think that if more of us could be brought to feel as Milt Bowers did when he came into Chicago to see me last summer, that it might be a good thing. Took Milt over to the offices of the best plumbing and steam fitting paper in the world. President of the company wasn't back from lunch. So I attempted to show Milt 'round. Took him through office after office in the big building; showed him how the news was gathered, how the articles telling the "how" of plumbing and steam-fitting were secured; how the advertisements were polished up so as to appeal—during all this I could see Milt was doing a heap of thinking. Then, when we went down in the mechanical department and saw the outfit necessary to get out a paper, and get it out right, Milt had his mind made up evidently to something.

By this time the president was back, and as I introduced Milt I could see that my old Colton friend had something on his mind—seemed sort of embarrassed like through the interview. After we'd left, I said to Milt, "Well, what's troubling you?" "Well," he said, slow and careful like, "I was thinking what a chump I'd been making of myself for the past five years, thinking I was doing *them* a favor in exchanging a dollar for at least ten dollars' worth of product. Guess *I've* been the one who's been favored."

Like everything else in this world, there's a right way and a wrong way to co-operate with your trade paper.

It seems to me, since I've studied the matter up a bit, Jim, almost criminal not to utilize your trade paper to the greatest possible extent. When you've paid for a year's subscription, your opportunity has only just begun. Above all men, the editor wants to give you what you want. What will benefit you most, that he works and plans to give you.

So get in touch with the man who is thinking and planning and working and figuring, day in and day out, for your benefit. Write him—kindly if you can—but write. When you don't exactly agree with something, don't set back and lay it up against the paper; write in and get the atmosphere cleared, *at once.*

And, most of all, Jim, when you see a particularly good article—one that strikes you just right—let the editor know. He may have lots more of the same right on tap, but, not knowing how well you like it, may let it go without printing because he does not know how well it pleases you. Then, beyond the editor, often is the writer. These writin' chaps, Jim, are peculiar fellows; sometimes a grain of praise does 'em a pound of good.

But whether you praise or blame, Jim, be sure you ask questions. There's nothing—unless it's appreciation—that helps an editor like questions, questions, questions.

For there you are in Colton, seeing a different class of people—having a different run of experiences than the man in the city. He's been a country business man, such as you are now, so he's quick to understand you—when you show what your thoughts are—by *asking.* It's like a good, breatheable breeze of country air blowing into his sanctum when you quiz him—so do it often.

And, while on this subject, I must tell you again about what came of a little good-natured quizzing—all meant as "bore," as our Indiana friends say.

Cass Porter sold his farm, you remember, back in '96, and moved to town and started to talk

"opera house." Said Colton needed a "modern structure," place of the one we had. Sit for hours, Cass would, making mind plans and specifications. Finally, one day Hep Burns—great joker was Hep—then my head man, said, "Cass, that opera house proposition of yours is too big for Colton. Tell you what you do, write these folks" (and he held up the trade paper) "and tell 'em about your project and they'll hunt up some one for you to do the job."

Well, Cass got some of my stationery and started in, and 'fore the afternoon was through had ground out some considerable of a letter.

Next week, when the magazine came out, there was a big statement that Colton wanted an opera house; that Mr. Cassius Porter, the well-known financier of that section of the country, was backing the project, and that John Burton would do the plumbing and steam fitting.

Laugh was on Cass for about a week, when some outside parties took right hold—and, thanks to our trade paper, we had a "modern structure" within a year. (Burton contracts were $1,183.57 all told.) Don't know when we all enjoyed a joke quite as much as that, either.

So, Jim, ask your trade paper for anything; you may not fare as well as Cass, but you won't lose anything, at any rate.

Then, another thing: When anything comes up in the shop or office that might do good if passed along, write it up and send it in. As I look back, I see hundreds of things that ought to have gone to the trade paper—little incidents—short cuts—labor-saving devices—comments on new goods. Don't hurt you a bit to have your name in print; it all helps to make you feel a better, broader man.

Another thing: When a man or firm is doing an out-and-out business, you'll see their ads week in and week out in the good old trade paper. When some traveling man comes around, presenting you a card bearing a name which doesn't sound familiar, get the last copy of Old Faithful and ask him to point out his firm's advertisement. If he can't do it, and you *must* buy of him, get an ironclad agreement, buy light and wait with your big order for the man whose firm runs a big ad.

It's the firm that's square that seeks the light of publicity; the burglar never advertises.

Your trade paper prospers only as it can get advertising. The dollar you send once a year would hardly more than pay for the white paper, to say nothing about the editorial and mechanical work. It's the advertiser who pays, Jim. So, to play fair with your paper, you've got to let the advertiser know that you've got in touch with him through that paper of yours; then, in writing for catalogues, or to make inquiries, or for any other reason, always mention your paper in writing.

And be not afraid to use the advertising columns yourself. That's what they're for. (A skinny little 85-cent ad in my trade paper got me a thousand-dollar man—inside of a week, too—when I had to have him.)

Now, Jim, I want to counsel you last to buy all the accumulated experience that your trade paper offers you.

What is accumulated experience?

I'll tell you.

Your trade paper is a vast organization for securing, sorting, verifying and polishing the world's information on the plumbing, heating and lighting trades. Think, then, of the vast amount of information accumulated in ten or twenty years! What's the use of going over the ground that the paper has already gone over? Not a bit; not the least bit.

So, when you are offered an opportunity to get any of that costly, priceless accumulated experience in the form of an authoritative text or manual, just grab it. Don't wait for the gentlemanly representative to call; write in and get a full list, and spend a nickel a day on the best technical works that money can buy. I'll guarantee it'll pay you a thousand per cent, which is pretty good, as investments go.

Yours for enlightenment,

Uncle John.

Heard in the Divorce Court.

"Your honor, I don't think I should be obliged to live with this woman any longer," said the dispirited and dyspeptic little man who was the plaintiff in the case. "Her cooking is something dreadful, biscuits like clods and her coffee is mud! Why, to every cupful there is half a cup of grounds!"

But the judge's ruling was that half a cupful was insufficient grounds for divorce.—Lippincott's.

The Windy City.

A teacher of a class of boys tells the following true story:

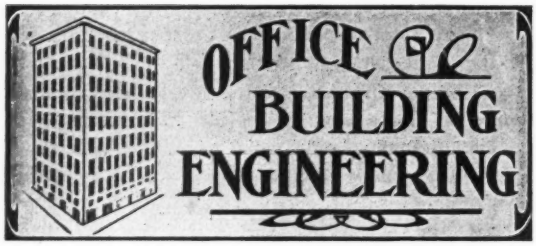
The lesson was about Chicago. The teacher was trying to suggest to the children the name Windy City.

"There's another name for Chicago. It begins with w and ends with y," she said.

No one could tell the name.

"I have a brother who lives there," she continued, "and sometimes in going home at night he has to stop and catch hold of a lamp-post to get his breath. Can't you guess now?"

Then a boy waved his hand excitedly. "I know," he shouted triumphantly. "It's whisky!"—The Popular Magazine.



The Services of the Building as Affected by Engineering

Written expressly for "Domestic Engineering." All rights reserved.

The Elevator Service. Steam, Hydraulic and Electric Systems.

(Continued.)

The duplex pump has two cylinders side by side, each one of them operating its own water piston or plunger. On each piston rod is a crosshead, to which is attached the long end of a lever having as a fulcrum a rock shaft crossing the frame of the pump, and on the other side the short end of the lever connected positively to the main valve. Thus the piston rod of each side has a positive connection with the valve on the opposite side of the pump. There are no chest pistons, auxiliary valves or tappets—nothing but plain levers, links and pins—and in some cases where pins have been broken the engineers have temporarily replaced them with common rough bolts and kept the pump going. Pumps working on this principle cannot have the valves stick if a piston moves. The exhaust from each end of the cylinder comes out through a separate port from that by which the live steam enters and the valve is made of the D pattern with long lap covering both parts. The valve seat thus has five ports in it, and with the long valve enables the piston to enclose enough steam in the cylinder at each end of the stroke to cushion upon and prevent striking of the head. On the larger sizes of these pumps are found plug valves, which when open connect the two ports at each end of each cylinder and permit the piston to make a longer stroke than it sometimes will with the plug valves closed. This shortening of the stroke is the most objectionable feature of the duplex pump. It sometimes assumes such great proportion as to make the pump a very expensive machine to run. The causes may be as follows: Something may go wrong with the water end on one side and the piston on that side have little to do beyond overcoming friction. It then makes a full and rapid stroke, using a cylinder full of steam. The rapidity of the stroke is so great on the unloaded side that the valve on the other side is moved through its whole travel and reversed before the piston under it (moving more slowly than its mate because of its load) can make its full stroke. Again, the resistance to be overcome by one piston may be greater than that presented to the other by reason of piston or other packing being too tight on that side, and so the piston on that side, being unable to travel fast enough to match the speed of its valve, must make short strokes to keep step with it. Further, something may go wrong with the steam valve on one side and deprive the piston on that side of its full pressure, while the other side gets all it needs. The side thus robbed must make a short stroke. Thus we see that lack of balance between the loads or driving powers of the two sides is the ultimate cause of short strokes and the waste of steam that attend them. If this short-stroking tendency be properly guarded against the pumps, they furnish a good source of hydraulic pressure, and are to be found (more or less modified) in more plants than all other kinds put together.

Our elevator pumps being determined upon as single cylinder or duplex, we may properly further classify them according to the number of expansions of the steam driving them, as simple, compound or triple expansion. This latter term as applied to a direct acting pump with three cylinders is a misnomer, for the single cylinder allows steam to follow the piston at practically full pressure to the end of the stroke with no expansion at all. To get some expansion and the economy resulting from it, we add a low pressure cylinder to be operated by the exhaust from the high pressure cylinder; usually this low pressure cylinder has double the area of the high pressure cylinder, so here we have one complete expansion and save a very considerable amount of energy. We may add another cylinder and get a second expansion if we desire and will then have a fairly economical pump, such as we find in many high-grade plants. Such pumps are simple, easily understood and kept in repair, but the expansion from one cylinder to another, when the full pressure must follow the piston through the entire stroke, is so far inferior to that which may be obtained in the cylinders and from one to another (when some power can be stored to carry on the movement of the machine when the expansion becomes so great that while the steam still pushes on the piston, it cannot push hard enough to do the work alone) that crank and fly wheel pumps have come on the market in answer to the demand for a highly economical pump. These pumps are usually made with three steam

cylinders and three cranks set one hundred and twenty degrees apart. Each steam cylinder has its own water end and the steam valves are positively and accurately moved by eccentrics on the shaft that carries the fly wheel. This wheel is made of such weight that at its slowest speed when loaded it will carry the work on through the six periods of maximum expansion and low pressure that occur in each revolution. There are also six impulses given to the shaft in each revolution, tending to make the movement more uniform than if there were only two or four. These pumps are the most economical of all directly steam driven non-condensing elevator pumps. The first cost of such pumps is greater than that of the more simple duplex triple expansion pumps; and unless the whole plant, including the heating apparatus be of the same high grade, the cost of live steam to help out the heating service may offset the economy of the pump, because so much of the heat of the steam driving the pump is converted into work, that a small quantity does the work, and while the ratios of the cylinder areas may be so arranged that the steam used in the last cylinder will not be expanded below atmospheric pressure and will then have high value per pound for heating purposes, the small quantity used may not be sufficient, unaided by live steam to do the share of the heating of the building that should be done by the elevator service. Another type of pump that may be used for hydraulic elevator service is the motor driven tri-plex power pump, having a crank shaft with three cranks, each of them operating through a piston rod and crosshead, a pump similar to that of the crank and fly wheel pump. The crank shaft is geared to a motor taking current from the lighting system of the building or from the street; a suitable starting arrangement starts the pump when the tank pressure drops a little or when the water in the suction tank rises, thus maintaining the pressure. Still another type of electrically driven elevator pump has recently appeared on the market and gives promise to be a very economical arrangement. This is the compound centrifugal pump. It is built to be directly connected to any electric motor of proper speed, and will develop a pressure as great as may be desired, the pressure possible increasing with the number of rotors. A simple device relieves the pump of its load when the pressure reaches a proper value; the motor then has only its own friction and that of the pump to overcome, and where several elevators are used the waste of power in idle running is less than it would be in overcoming inertia in starting from rest. This type of pump occupies less space than any other pump capable of doing the same work. Further, it has no valves or moving parts other than the rotors, and they are single pieces all on one shaft, to which is fastened by a suitable coupling the armature of the motor. As the motor runs continuously the ordinary starting box is all that is required. With a centrifugal pump the motion being rotary, we have little danger of vibration or pulsation such as attends the operation of reciprocating machinery. The destructive action of such movement on steel frame buildings is one of the undesirable features to be guarded against in the design of the power plant of any office building. With a sufficient supply on hand of water under proper pressure and led by suitable piping to and from our elevator machines we may properly consider the machines themselves. The elements to be found in nearly every hydraulic elevator machine are a cylinder in which under the hydraulic pressure, moves a piston to which may be attached one or several piston rods at the other ends of which is attached a crosshead connected to the hoisting cables. The cylinder may be, according to its location, either horizontal or vertical, and the pressure may be applied to the piston so that in operation the rod or rods may be under tension or compression; then the cables may be run from the crosshead to the car, or they may be run from a fixed point over one or more traveling sheaves so that the car may move as fast as the piston or faster; generally enough sheaves are used to make the car move from two to twelve times as fast as the piston. Where basement space is valuable, the vertical cylinder type of machine can be arranged with everything above the first floor except the lower sheaves of the controlling mechanism. The space occupied above the ground floor in such a case, will be from two to four square feet on each floor over and above that needed for the passage of the car.

To be continued. All rights of republication reserved.

One on the Officers.

Judge: "What brought you here?"
Pat: "Two policemen, your honor."
Judge: "Drunk again, I suppose?"
Pat: "Yes, sir; both av thim!"—Judge's Library.

Fortunate Moment.

"Alas!" confessed the penitent man, "in a moment of weakness I stole a carload of brass fittings."

"In a moment of weakness?" exclaimed the judge. "Goodness, man! What would you have taken if you had yielded in a moment when you felt strong?"—Boston Globe.

Practical Suggestions about Blower Systems for Shop Heating—I

By F. R. Still

Written specially for "Domestic Engineering."

What system of heating is best adapted for the shop under consideration is frequently an important question. There are all kinds of methods—some good, many poor and a large number positively bad. It is not within the province of this article to analyze the merits and demerits of the various systems, but to point out the advantages obtainable with a good system of heating and to explain how it should be laid out, installed and operated to secure the best results.

A good heating system is quite as essential to the success of any manufacturing plant as good materials, good tools and good light. Employes will not work at their highest efficiency when uncomfortable; neither will high-grade mechanics stay in a shop which is poorly equipped when there are other shops having modern conveniences for their comfort. First-class work can only be turned out by first-class mechanics. If they cannot be obtained the natural result is disorganization, a poor grade of mechanics and inferior output. Even if experienced mechanics can be retained they cannot put forth their best efforts, either in thought, carefulness or speed, if the atmosphere is impure or the temperature is uncomfortably warm or cold.

There are instances arising every day which prove conclusively that the heating plant has a positive and direct influence on the quality and quantity of the output. It does not require exceptional abilities for observation or analysis to discover this. Which plant is it that grows the faster—one with poor and antiquated equipment or one which has everything up-to-date? Which one of the two would make the better impression upon you?

Did you ever associate the shop conditions as you found them with the business done and the progress made? While the entire success of the plant cannot be attributed to the sanitary conveniences and the comforts afforded the men, yet it is a safe conclusion that the same management given a shop devoid of these things could not make the progress attained with them.

Those who recognize the advantages of a good heating plant frequently do not realize the necessity for designing it when the plans of the building are being made. The result is that instead of arranging other things of much less importance to accommodate the heating plant the latter has to be contorted, cut down or squeezed into whatever space is available after everything else is taken care of. This makes the plant either expensive to install or to operate, and often it is so contorted or dwarfed in one way or another as to fail to give the satisfactory results naturally expected.

One who has gone through this experience once forestalls a recurrence by having the heating system laid out on the plans of the building so as to form an integral part of the construction. In the hands of a competent engineer, the owner of the building is thus pretty sure to get what he wants and to avoid petty annoyances and dissatisfaction later on.

When it comes to laying out a heating plant, the character of the building and the purpose for which it is built must be carefully studied. What answers for one type of building is totally unsuited to another of a different type. Again, what serves very nicely in a building of a certain type, in which a particular class of work is done, proves anything but satisfactory in a building of the same type in which a different kind of work is done.

This can be made clear by comparing a machine shop with a paper mill. They are similar in size, shape and exposure. In the machine shop no steam or moisture is emitted to condense on the walls and roof; hence many of them are heated in a fairly satisfactory manner by direct radiation, consisting usually of steam coils strung around the outside walls. Such a system would never do in a paper mill, where every day several tons of water are thrown off into the atmosphere in the form of steam from the drying cylinders over which the paper passes. This steam must be taken up by a copious circulation of warm, dry air, or it will drip from the roof and run down the walls in streams.

Again, in a shoe factory, shirt, glove, cap or other manufacturing plant, where hundreds of employes are assembled in one room, the air very soon becomes unfit to breathe; it produces a dull, languid feeling, which saps all the vitality and ambition of the employes, makes them inert, forgetful, careless, subject to severe colds and other disabilities, all tending to make them irregular in their attendance to their duties. To overcome this, the building must be well ventilated, and the ventilation of a building in the winter time must be considered in connection with the heating system.

Foundries are much like the paper mills just cited, as the steam rising from the moulds when pouring off, as well as the smoke and noxious gases, should be removed. Roof ventilators, monitor lights or

ventilating sashes are very poor makeshifts indeed. Perhaps they will let some of the smoke escape and with it some of the gases and most of the heat; but most of the gases, being heavier than the air, lie in the lower strata near the floor and are not affected by the roof vents. Further, instead of removing the steam, they only accelerate the annoyance from it, as the warm air which escapes through the roof must be supplanted by outside air, and this, not being properly heated, chills the air within the building, thus reducing its capacity to carry moisture, thereby causing greater precipitation than there would be were no attempt made to ventilate the building. Instances are numerous where so much moisture has been condensed on the roof as to spoil the moulds on the floor, and this even in foundries well heated, so far as temperature is concerned, by direct radiation.

Then again, apart from the use to which the building is put, consideration must be given to its character.

The tendency nowadays is to put up lofty buildings. Such structures have steel frames, walls made almost entirely of glass, with only narrow pilasters between, and shallow panels of brick or concrete above and below the openings. The exposures are relatively enormous, requiring large amounts of heating surface, yet the spaces available

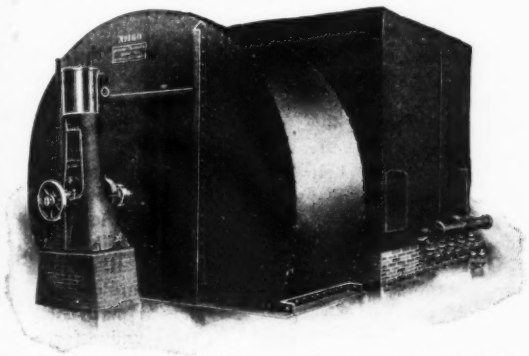


Fig. 1. Showing motor, blower and enclosed steam coils.

for steam coils are limited to such an extent that they are often insufficient for the heating surface required.

Furthermore, when the space is sufficient, the banking of such great heating surfaces into a small space makes it uncomfortable for the employes who have to work near them.

It is these and many other features that have made the blower system popular, as it has proven efficacious in almost every building of whatever character, when it has not been misapplied. Many of the designers of such heating plants seem to have a penchant for trying to make this system do all sorts of unusual and almost impossible stunts. The system is so flexible and so positive in its action that many persons seem to think it capable of defying nature's laws. But occasionally nature asserts her rights in a most emphatic manner, with the result that a plant fails to do what was expected of

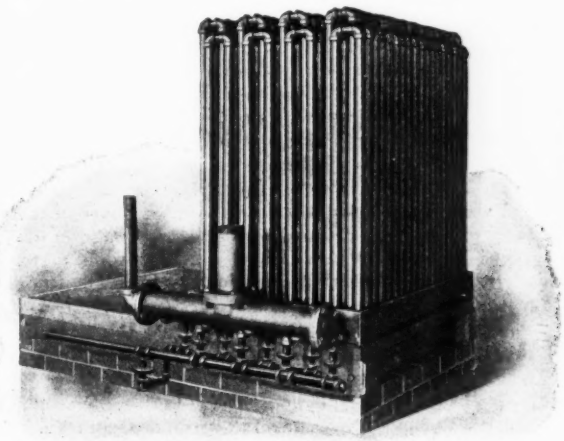


Fig. 2. Showing bank of steam coils, encasement removed.

it. This, however, is no fault of the system, but rather of the man who designed the plant.

The blower system, sometimes called hot blast system, plenum system or mechanical heating and ventilating system, is so universally known as to need little more than the most superficial description of the apparatus, though there is plenty to be learned about the best way to install it.

The apparatus consists of a large blower, driven by an engine or motor, and a deep bank of steam coils enclosed in steel (Fig. 1). The blower causes the cold air to circulate rapidly in contact with the outer surfaces of the steam pipes (Fig. 2), thus becoming heated to a temperature ranging from 120 to 160 degrees; thence it passes into conduits or distributing ducts which convey it to the departments to be heated, where it finds egress from the ducts through branch outlets. These outlets are sometimes simply sheet iron pipes with adjustable dampers for regulating the amount of air discharged; others end in register boxes with cast-iron register faces covering them; again others end in cast-iron or sheet steel hoods, all depending on the local conditions and requirements. The ducts are usually made of galvanized sheet iron, for all types of buildings except where it is necessary to place them underground, in which case they are built of brick, vitrified tile or reinforced concrete.

(To be continued.)

Learning the Craft—II

By Phoenix

Written expressly for "Domestic Engineering." All rights reserved.

During the first several months of a boy's employment all the dirtiest, hardest and meanest tasks will be put off on him. So, I say:

Keep up your nerve and do not get discouraged.

Apply all your force and sense to each "job."

"Catch on" as rapidly as possible. **Learn to take measurements exactly.**

Find out how to do the most work with the least effort. Some shops have a good system, others none. Many times it's a strange journeyman to "try out" while the new helper is being "broken in." At the very start it's "Where are 'de tools?'"—"Get an order," and a general helpless confusion for two hours in that shop. They all fail to make "the head save the heels."

The amount squandered each year for tools in the average shop employing from four to twelve journeymen is beyond reason, and many a shop at the end of the year finding its profits "nit" (or worse) could, by proper management, have saved a nice sum in this single item.

One cause for this **loss on tools** is the employer himself, who many times starts his workmen with an inferior "kit."

A cheap set of stocks and dies, a poor lot of wrenches and cutters are a constant source of expense for repairs, and gives the journeyman and helper a good excuse for "bum" work. **If each mechanic owned his "kit,"** as they sometimes do in certain sections of the country, **and as is the case with the carpenter, there would be fewer lost, broken or misused tools.**

The "kit" should always be charged against the journeyman, but he should be furnished with a good lock and a secure tool chest. The following list contains the names of a fairly complete "kit" required on on ordinary heating job:

One tool chest, one vise, one No. 2 chain tongs, one No. 4 chain tongs, Nos. 1 and 2 pipe cutters, Nos. 2 and 3 stocks, adjustable dies—right and left—from ¼-in. to 2-in., pipe wrenches—one of each—size 14-in., 18-in., 24-in. and 36-in.; one 50-foot tape line, one 4-foot rule, one 12-in. half-round file, one 12-in. flat file, one 10-in. round file, one 6-in. saw file, one 18-in. ratchet screwdriver, one 15-in. spirit level, one pocket level, one pair pliers, one center punch, one ¾-in. cold chisel, one diamond chisel, one cape chisel, one round-nose chisel, one 24-in. brick chisel, one set carpenter's bits, one extension bit and blades, one 12-in. ratchet brace, one plumb-bob and line, one bricklayers' trowel, one pointing trowel, one 2-pound machinist's hammer, one claw hammer, one 20-in. hand saw, one 12-in. compass saw and "nest," one 24-in. search bit, one 6-in. monkey wrench, one 12-in. monkey wrench, one 18-in. monkey wrench, one 12-in. hack saw and one doz. blades, set of taps, right and left, ⅛-in. to 2-in.; one good oil can, one gallon first class lard oil in a stout can, five or ten pounds of waste, some nails, screws, bolts, etc., in till of chest.

The tools for working pipe larger than 2-in. should be packed in a separate box, securely locked.

The ordinary cold chisel is a mighty poor affair. It's better to buy up stonecutters' old chisels and have them tempered over and drawn out to suit your use. You will thus obtain much more serviceable chisels.

Workmen differ in the number and choice of tools. Here is where one of the first mistakes occurs. Both fitter and master forget, and the journeyman goes to his job without a complete set of tools, and has to keep adding to his outfit constantly. Sometimes **neither** fitter nor master can make out a correct list. Certain good shops have printed slips already made out for reference—**but such shops are few in number.**

One of the tools most frequently put "on the bum" from both ignorance or carelessness and sometimes because of its poor quality is the pipe cutter. It is possible in less than one hour's time to misuse **any cutter** so that it will become **nearly useless for rapid or accurate work.** Use some oil; **it's cheaper than** new

This tells about fitters' tools and their abuses

tools. Do not put too much pressure on the wheels at each revolution of the cutter around the pipe, as if you expected to cut it in two immediately. The hand should follow the line of cutting and not pull sideways, **as this makes a crooked cut** and spoils the wheels. Remove worn pins and replace dull or nicked wheels, saving time, strength and **"temper."**

A crooked cut makes it hard to "catch" the stocks and dies, frequently resulting in a poor thread, and generally making it difficult to "send home" a fitting properly. This will cause a leak and then "trouble begins" for everybody.

A mechanic or helper who will hammer a pipe or fitting with a "Stillson" or "Trimo" deserves to be "fired" at once. Any journeyman who tries to take the "crook" out of a pipe or to line up a branch, by "belting" the pipe with a wrench with all his might has no claim on the patience of his employer. The same is true of the man who slips a piece of pipe over the handle of the wrench, putting undue force upon the tool and either bending the handle or breaking the jaw. This second man, however, may have an excuse to do this once in a while, as he may be miles from his shop, or not have proper tools furnished. If the master or foreman insists on the use of inferior or "bum" tools it is his loss, although it may be rather severe on the muscles of both journeyman and helper. It does not make matters any better by "slamming" the tools around and breaking them. **Put up with it, or quit.** There are other jobs. To get mad is to get "rattled" and simply "fiddle" at your work. A good mechanic does not appear to "hustle," yet every movement counts. He wastes neither time nor energy, and knows every move in the game. His "measurements" go together correctly, and he is not "fagged out" when five o'clock comes.

Use a little oil before starting to cut the thread on the pipe. Keep plenty on until the thread is finished. If the vise will not hold the pipe securely do not try to make it tighter by setting it down hard enough to dent the pipe. **Get some new jaws. Use good horse sense. This applies to everybody concerned about the "whole works,"** beginning with the master and ending with the helper. Few masters stop to think that their shop, the way the work runs and its character are more or less a direct reflection of themselves. If one has no system, is careless or "easy" or tricky it will all, like curses and chickens, "come home to roost." Many times the thousand and one annoyances that make life a burden for all in the shop are **due to the "old man" himself,** who lacks the sense or patience, or who does not possess "sand" enough to tell his men where to "head in."

The dishonest master will receive tricky returns; he who deals out kicks and curses has a whole lot "coming" to him. His men will reflect this treatment. But the man who has sense, compassion and restraint, and remembers that his employes are human, and who is not afraid nor ashamed to mingle with them on the right grounds, sharing their joys and sorrows and expressing his appreciation of their efforts in his behalf, this man "gets action" for his investment, and his men grow to resemble him. You **do find such people** here and there throughout the land, standing out as lighthouses along the shores of life, pointing the way to a better system of work, better results and better godds. Whenever you find such a shop and such a man they are generally busy.

The Data Sheet which we promised our readers in this issue will be published next week.—Editor.

CONVENTION DATES.

February 8, 9 and 10.—Fourth annual meeting of the **American Society of Inspectors of Plumbing and Sanitary Engineers,** at Omaha, Neb. Headquarters at the Rome hotel.

February 10, 1909.—Annual convention of the **Florida State Association of Master Plumbers,** at Tampa, Fla.

February 15, 1909.—Annual convention of the **West Virginia State Association of Master Plumbers,** at Clarksburg, W. Va.

February 16 and 17, 1909.—Eighteenth annual convention of the **Ohio State Association of Master Plumbers,** at Armory Hall, Springfield, O. Headquarters at the Arcade Hotel.

February 17, 1909.—Regular meeting of the **Eastern Supply Association,** at the Hotel Astor, New York City.

February 24, 1909.—Regular meeting of the **Central Supply Association,** at the Victoria hotel, corner Michigan avenue and Van Buren street, Chicago.

March 8 and 9, 1909—Annual convention of the **Kansas State Association of Master Plumbers,** at Kansas City, Kans. Headquarters at the Grand hotel.

Fifteenth Annual Meeting of The American Society of Heating and Ventilating Engineers

New York, N. Y., Tuesday, January 19, 1909 (special). The fifteenth annual meeting of the American Society of Heating and Ventilating Engineers began its initial session in the beautiful rooms of the new Engineering Societies building, 29 West Thirty-ninth street, this afternoon, with the early arrivals indicating that a record attendance will be in evidence during the remainder of the meeting.

The severe winter weather seems to have had no effect in deterring the members from attending the meeting, nor in any degree abating the earnestness which characterizes their deliberations, nor their enthusiasm in digging out new truths pertaining to their chosen profession and adding to the sum of knowledge to aid the members of the heating profession in their great work in ministering to the comfort and welfare of humanity in providing comfortable and properly ventilated habitations.

Earnestness seems to be the key-note of the meeting and is noticeably apparent in the faces as well as the remarks and discussions of the members.

Tuesday Afternoon.

President James Mackay called the meeting to order at three o'clock and immediately **appointed a reception committee** composed of James A. Donnelly, George B. England and T. B. Cryer, to look after the welfare of out-of-town members and guests.

Following the order of business as programmed, **Secretary W. M. Mackay read the names of members elected** since the last meeting, as follows

New Members.

Louis K. Berman, 1966 Broadway, New York.
M. M. Cochran, St. Paul, Minn.
Chas. A. Gillham, 212 State Bank Bldg., Lebanon, Ind.
Joseph G. Hayes, 439 Indiana Ave., Indianapolis, Ind.
John H. Kassa, Milwaukee, Wis.
Geo. W. Knight, City Hall, Newark, N. J.
Arthur S. Leitch, Galt, Ontario.
W. W. Macon, 14 Park Place, New York.
Peter F. Maginn, 1025 Forbes St., Pittsburg, Pa.
Sidney R. Sheldon, Galt, Ontario.
Lawrence C. Soule, 282 Michigan Ave., Chicago, Ill.
Frank H. Stevens, 1334 Monadnock Bldg., Chicago, Ill.
John H. Textorius, 138 East 31st St., New York.
Jacob O. Trautwein, 6025 Vincennes Ave., Chicago, Ill.
James R. Wade, St. Louis, Mo.

New Associate Members.

Hubert R. Hill, 110 Laurel street, Oakland, Cal.

The secretary then called the roll after which, upon motion, the reading of the minutes of the last meeting was dispensed with.

The president's address was next in order, and Mr. Mackay received hearty applause for his words.

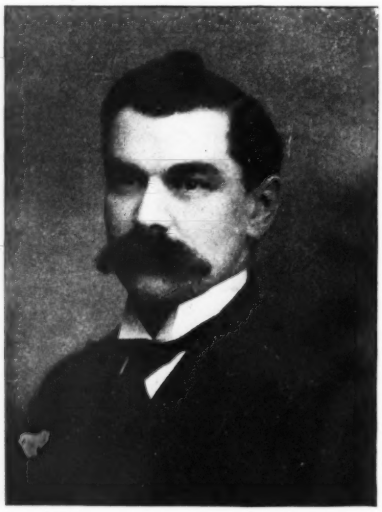
President's Address.

"Gentlemen of the American Society of Heating and Ventilating Engineers:

"Once more we gather to promote the aims and objects for which our organization was formed, namely: Advancement of the arts and sciences connected with heating and ventilating, and as your presiding officer it is my privilege, as well as pleasure, to open this, our fifteenth annual meeting.

"It is hoped and expected that the proceedings of the several sessions of this meeting will prove as valuable and interesting, as are the records of those meetings which have passed into history.

"During the year just closed your officers and board of directors have endeavored to execute your instructions and perform their duties, as outlined by the constitution, in a dignified and creditable manner.



JAMES MACKAY, OF CHICAGO,
Retiring President of the American Society of Heating and Ventilating Engineers.

"The society has made gratifying progress numerically, and from an engineering standpoint, our attainments are everywhere recognized as most creditable.

"Agreeable to, and under control of our constitution, one chapter of the society is in active existence. It is composed of earnest members of this, the parent body, all of whom attend every monthly meeting of the chapter, take active part in all discussions, work with enthusiasm for the good of their chosen calling in general, and for the American Society of Heating and Ventilating Engineers, in particular.

"Our friends of the press have accorded our organization due credit for the good we have accomplished, and have given us that generous share of publicity, which is beneficial, not only to us, but to all who are interested in our work.

"I congratulate the society upon the interest and activity shown in our work during the past year. I fully realize that we are all busy people, and yet I know that all have contributed, in some measure, towards our growth. Personally, I thank each and every member for the thought bestowed, the time given, and the labor expended in our behalf.

"The research of committees contributes largely to the success and merit of our work. Credit is due to all your committees for their labor, and for the excellent manner in which they have discharged their duties.

"The society is to be commended for the position it has taken upon the subject of proper and necessary ventilation, and for what it has done towards promoting the same, through legislative enactment, and otherwise. On the whole, we have accomplished much in the past, are in a healthy state of efficiency at the present time, and the future is laden with promise.

"We are living in an age of specilization and progress, when ripe experience, practical knowledge, and sound theory are paramount. The schoolhouse, the mail box, and the telephone are crowding the frontier. The wolf and the wilderness are retreating. Are we keeping well abreast of this swinging forward march?

"When we realize that in no line of human activity, save one, has greater material advancement been made during recent years than in the industries that are based chiefly upon the arts and sciences which we study and promote, this query is natural, and suggests vigilant consideration of all our affairs from every possible angle, so that we may wisely improve our methods and enhance the value of our labors.

"The published volumes of our proceedings, 13 of which are issued, and one now due, mark our progress, and indicate our growth. These volumes constitute our literature, and, in a broad sense, are our greatest asset, for they tell the world what we are, what we have accomplished, and what we hope to be. As a reference library, they are important, and are consulted as authority.

"But a study of these volumes will show that certain subjects have been similarly discussed more than once, without eliciting in the later repetitions, anything of fresh engineering value. Therefore, it would seem wise, by some means, to thoroughly review our literature, so as to avoid these useless and time-consuming reiterations.

"It behooves us also to keep our records up to a rigorous scientific standard. And, with these two points in view, it has been suggested that your society devote a future meeting to a review of our past publications. I concur in this suggestion, and recommend that your next president and board of governors arrange such a meeting.

"We have in our possession a number of engineering publications, acquired in exchange for ours. These volumes form the nucleus of a library which should be extended, catalogued, and made more available for the general use of our members. I recommend that action be taken with this end in view.

"Improvement in the society's facilities will result in individual benefit. Therefore, we should all take greater interest in studying the requirements necessary to promote our work.

"Let us by the character of our attainments attract to our membership those of the profession whose association with us will be the most beneficial in promoting good.

"Engineers, in the field of heating and ventilating, have more especially devoted their efforts towards inventing and designing improvements upon the older types of apparatus or appliances used in the better known applications of the art. Innovations have been made, but examples are comparatively few. **There are untrodden paths in the broad field of engineering effort which await exploration.** We should know more about the use and possibilities of super-heated steam. Simple and more efficient means are required for purifying the air and ventilating all the rooms of our buildings.

"Another desirable possibility is **a simple and inexpensive apparatus for cooling the air of our rooms** during the summer months as many degrees Fahrenheit as we now raise its temperature in the winter season.

"But improvement in present practice is of equal importance. Let us discourage guess work and rule of thumb methods and encourage more scientific designing and installation of heating and ventilating work.

"Our aim should be for **excellence in theory and practice,** bearing in mind as a precept, the oft quoted words attributed to Emerson: 'If a man can write a better book, preach a better sermon, or make a better mouse trap than his neighbors, though he build his house in the woods, the world will make a beaten path to his door.'"

Secretary's Report.

The following is **Secretary Mackay's annual report,** This report was accepted with approval and placed on file.

"Gentlemen: Your secretary would report an increase in membership during the past year. **At the last annual meeting our membership** was composed of: One honorary member, 278 members, 27 associates and 17 juniors, **or a total of 323 members** of all grades.

"By a unanimous vote of the members present at the last annual meeting, Charles W. Newton of Baltimore, Md., a charter member of the society, was elected an honorary member. During the year we have added 32 members, 3 associates and 2 juniors to our roll, 3 members were dropped from the roll for non-payment of dues, 3 members and 2 associates resigned, 1 member, 2 associates and 1 junior failed to qualify, and we had two deaths in our ranks during the past year. Mr. Enoch Rutzler, who became a member in 1901, died February 29, 1908, and Mr. Harry J. Ott, who became a junior member in 1906, died September 25, 1908.

"Our present membership is: Two honorary members, 302 members, 26 associates and 17 juniors, **a total of 347 members of all grades, a net increase of 24.**

"The financial affairs of the society are in a good condition. At the last annual meeting there was a balance in the hands of the treasurer of $2,044.86. During the past year we have received from all sources $3,928.93, which, with the balance on hand, made a total of $5,973.79. The total expenditures amounted to $4,025.84, leaving a balance in the hands of the treasurer of $1,947.95.

"There is owing to the society from members for dues and proceedings and from newly elected members for initiation fee and dues, $1,215. This, with the balance on hand, amounts to $3,162.95. All bills have been paid except those in connection with this meeting, the secretary's account for December and the bill for the 1907 proceedings which have just been received from the printer's, and are ready to be sent out to the members.

"The members dropped from the roll during the past year owed the society $80.

"The 1908 proceedings are being edited and will be placed in the printer's hands as quickly as possible.

"At the request of your secretary the constitution was amended so that he as well as the treasurer would furnish a bond, and his bond for $1,000 has been filed with the board of governors.

"The secretary's expenses for the year, including stenographer, clerk hire, rent of post office box, certificates of membership, expenses in connection with the summer meeting, postage, express, telegraphs, telephone, office rent, etc., amounted to $1,121.49, being $68.99 less than the previous year.

"The society held a summer meeting at Niagara Falls July 24 and 25, 1908, which was successful in every way.

"Most of the papers for the present meeting were received late, but all were printed and sent to the members eleven days ago, together with the reports of three important committees presented for consideration at this meeting.

"The secretary has fifteen applications for membership, which were received too late to be included in the last ballot. This will insure a ballot being sent out as soon after this meeting as possible, and those having applications to send in should do so at once so that they may be placed on this ballot.

"It will be interesting to the members to know that when I was first elected secretary **ten years ago, the society had 119 members, an increase of 50 per cent from the time of its organization five years before. During the ten years** that I have been secretary **the society has increased 300 per cent.**

"Your secretary has received $1,900 in salaries for the past ten years or an average of $190 per year."

The treasurer's report, read by Secretary Mackay in Mr. Scollay's absence, shows the following figures:

Balance on hand January 21, 1908	$2,044.86
Cash received	3,928.93
	$5,973.79
Disbursements	4,025.84
Balance on hand	$1,947.95

This report with that of the board of governors was accepted as read and placed on file.

The report of standing committee was then in order and J. I. Blackmore read the **Report of Committee for Collecting Data on Steam Heating for Small Buildings.**

Unfortunately this report was not printed and Mr. Chew's motion, to have copies printed for distribution

to the members for discussion at the semi-annual meeting, was carried.

Thomas Barwick, on behalf of the committee to collect data on air washers, reported progress.

Under the heading of **report of local chapters, J. F. Hale, Secretary of the Illinois Chapter** outlined the work of the Chapter and indicated that good results were accomplished at their regular monthly meetings.

The president **appointed as tellers** to count the vote for incoming officers: John R. Shanklin, of Charleston, W. Va.; O. L. Badger, of New York; Frank G. McCann, of New York.

James A. Donnelly moved that the secretary be instructed to communicate to the families of E. Rutzler of New York and H. J. Ott, of the Illinois Chapter, the sympathy and condolences of the the society. Upon the suggestion of Mr. Chew this motion was amended to include the family of Alfred R. Wolff, and carried.

President Mackay then appointed an auditing committee composed of P. H. Seward, S. L. Lewis and B. C. Davis, after which the meeting adjourned to reconvene at 8 P. M.

Tuesday Evening.

The first business of the evening session was the report of the tellers, who announced the result of the ballot as follows:

New Officers Elected.

President, Wm. G. Snow, Boston. 1st Vice-President, August Kehm, Chicago. 2nd Vice-President, Burt S. Harrison, New York. Secretary, W. M. Mackay, New York. Treasurer, U. G. Scollay, Brooklyn.

Board of Governors: James Mackay, Chicago; **B. F. Stangland,** New York; **Samuel R. Lewis,** Chicago; **R. C. Carpenter,** Ithaca, N. Y.; and **John R. Allen,** Ann Arbor, Mich.

Theo. Weinshank, in the absence of Prof. Hoffman, chairman of the committee on tests, read the report of that committee.

William G. Snow, chairman of the committee to collect **data on Fan Blast Heating** presented a second preliminary report of his committee. This was followed by a discussion and the presentation of some interesting data by Mr. West who was requested to place his discussion in writing that it might be incorporated in the records of the society.

Samuel R. Lewis, a member of the committee to collect **data on hot water heating** for residences, presented the report of that committee in the absence of its chairman, E. F. Capron.

Secretary Mackay read a written discussion by Prof. Carpenter, followed by a discussion by Messrs. Macon, Seward and others.

Prof. Kent's paper on Testing Cast-iron House Heating Boilers in his absence was read by Mr. Macon.

In the absence of a report from the committee to collect data on Rating House-Heating Boilers from the chairman J. H. Kinealy, a table of information on this subject with a paper in explanation of the same was presented by P. H. Seward, another member of the committee. This paper was followed by a lively discussion. Mr. Seward, Dr. Kitchen, Mr. Bushnell and E. M. Nichols, the representatives of the Master Steam and Hot Water Fitters' Association, taking a leading part. Mr. Nichols stated on behalf of his association that its members would be glad to co-operate with the society in arriving at improved methods of rating boilers.

It seemed to be the consenses of opinion that the amount of coal a boiler was capable of converting into heat in a given length of time should be the basis for recording its capacity rather than its amount of heating surface, as is now commonly done.

President Mackay appointed as members of the **reviewing committee:** Prof. James D. Hoffman, F. K. Chew, W. A. Snow, Burt S. Harrison and James Mackay. The meeting adjourned at 11:30.

Wednesday Afternoon.

Directly this session was called to order the meeting continued discussing the **Rating of Boilers.** Everyone present was deeply interested in this important matter and after much discussion the following resolution presented by Mr. Vrooman was passed: Resolved, that it is the sense of this society that in the absence of any standard for rating steam and hot water heating boilers, one should be established based on coal consumed per square feet of grate surface, and efficiency.

Mr. Seward also presented a resolution taking the form of a standard for rating boilers. This, however, was so voluminous that the matter, upon motion, was referred to the committee on standards. Prof. Carpenter and Messrs. Kinealy and Nichols also took an interesting part in the discussion.

A paper on **"Air Cooling by Refrigeration"** by W. W. Macon, was read by the author.

Mr. Thomson, chairman of the committee on **Relative Corrosion of Wrought Iron and Steel Pipes,** read his committee's report. He had a number of specimens of corroded pipe which he placed before the members for their examination.

In the absence of Prof. Hoffman, his paper, **"Notes on The Design of Furnace Heating Systems, with an Application to a Ten-Room Residence,"** was read by Mr. Snow.

Prof. Carpenter was of the opinion that this was the most important paper ever presented to the Society on this form of heating. Considerable discussion followed its reading.

The committee appointed by the president to **arrange for a review meeting,** reported through Mr. Snow that they had appointed the **following sub-committees:**

1—**Furnace Heating,** Chairman, C. M. Lyman.

2—**Hot Water Heating,** Chairman, W. M. MacKay.

3—**Steam Heating Large Buildings,** Chairman, J. F. Hale; **Residences, Small Buildings,** Chairman, S. R. Lewis.

4—**Electric Heating,** Chairman, T. N. Thomson.

5—**Heating Boilers,** Chairman, P. H. Seward.

6—**Radiators and Heaters,** Chairman, W. W. Macon.

7—**Central Heating Plants,** Chairman, Prof. Jno. R. Allen.

8—**Ventilation in General,** Chairman, Thomas Barwick.

9—**Compulsory Legislation,** Chairman, S. A. Jellett.

10—**Tests,** Chairman, J. D. Hoffman.

11—**Standards,** Chairman, Prof. R. C. Carpenter.

12—**Fans and Fan Systems,** Chairman, B. S. Harrison.

Adjournment was then taken until Thursday morning.

Wednesday Evening.—The Dinner.

The fourth session of the meeting, while not of the regular business nature, was by no means less interesting, and probably a great deal more enjoyable, partly because the ladies took part in it, and again it was hailed with enthusiasm because it afforded the members relief from the mental strain under which they have labored for three long sessions. This took the form of the **annual reception and dinner of the society,** and there surely could have been no better means of bringing the members and ladies together in social conclave.

Upon adjournment of the afternoon session, a general reception was accorded the members, guests and their ladies in the handsome parlors of the New Grand hotel at Thirty-first street and Broadway. This consumed two or three hours, and when the last had arrived a line was formed and the assemblage entered the large and beautifully decorated reception hall of the Grand, where the dinner was about to be served. Little is left to say about the banquet, for such it was in every sense of the word. Flowers and ferns were everywhere in evidence about the tables, and added to this array of splendor, came the menu of good things, made up of the most tempting dishes known to the chef's art. The merriment of the party increased in momentum as the evening advanced, and the minutes slipped by unnoticed.

When President Mackay, who acted as toastmaster, called for order the gaiety of the occasion was at its height and many rounds of applause greeted the speakers. **"The Engineer Abroad**—Letters From Our Foreign Members" was the topic assigned **Secretary W. M. Mackay, D. D. Kimball** spoke of the **"Position of the Heating and Ventilating Engineer Before the Public." "Opportunities" was Reginald P. Bolton's topic. "The Society's Aim," Henry L. Doherty's** topic. **"The Society's Influence" received attention at the hands of I. A. Jellett,** while **William G. Snow spoke of the "Future of the Society."**

With the closing of this feature of the dinner the gathering adjourned bubbling over with the spirit of the occasion, but reluctant to part from the scene.

Thursday Morning.

This session was called at 11 o'clock and gave the following topics its attention: "The Value of Tabulated Experience, Recognized as Science Compared with Individual Opinion and Experience."

"A Table or Sliding Scale of Indoor and Outdoor Temperatures for Gauging the Capacity of Heating Plants to Maintain a 70 Degree Temperature Inside with the Outside Temperature at Zero, this to be Established by the Society so that it could be Widely Incorporated in Heating Specifications and Add to the Society's Prestige."

"The Maximum Permissible Length for a Steam Main in a Gravity Apparatus Operating Under a Pressure not to Exceed Two Pounds on One and Two Pipe Systems."

"The Relative Area of Wet and Dry Return Mains in a Gravity Steam Heating Apparatus."

"The Deposit of Lime or other Mineral from Impregnated Water in a Heated Pipe with Relation to Diameter or Area, or the Relative Deposit in a One and Two Inch Pipe in a Given Time."

Adjournment was next in order.

Thursday Afternoon.

The final session of the meeting opened with the reading of a paper on "The Effect of Wind on Heating and Ventilating," by H. W. Whitten, associate member of the Society.

This subject was given considerable attention at the last annual meeting and was discussed interestingly at this session.

The Installation of Officers was next in order and each, after accepting his office, and promising his best efforts in the fulfilment of the duties of his office, entered upon the work at hand.

The following topics for discussion were in order and received the attention of the meeting until adjournment.

"A Standard Schedule of Blast Area and Lineal Feet of One Inch Pipe in Air Heating Stacks and Coils Based on the Cubic Feet of Air Passed Through the Heater per Hour or Minute and the Mean Difference Between Inside and Outside Temperature at Velocities from 1,000 to 1,800 Feet per Minute."

"The Factor to be Taken into Consideration and the Proper Method of Rating Fan Heating Coils in Determining the Co-efficient of Heat Transmission under Different Conditions of Temperature."

"The Standard Rules of the Society for Efficiency and Value of the Heating Surface of Different Types of Direct, Direct-Indirect, Indirect and Forced Blast Radiation."

Final adjournment was then taken.

Members and Guests in Attendance.

James Mackay, Chicago; W. M. Mackay, New York; Frank K. Chew, New York; John F. Hale, Chicago; August Kehm, Chicago; C. B. J. Snyder, New York; T. B. Cryer, Newark, N. J.; J. R. Shanklin, Charleston, W. Va.; F. G. McCann, New York; J. C. Faulkner, New York; M. D. Price, New York; Burton P. Hall, New York; E. M. Nichols, Philadelphia; Andrew G. Paul, Boston; H. W. Whitten, Detroit; J. F. De Lorme, New York; W. G. Moffett, Staunton, Va.; Ed. K. Munroe, Baltimore; Herbert A. Joslin, New York; H. D. Crane, Cincinnati; William E. Austin, Baltimore; Wm. H. McKiever, New York; A. S. Armagnac, New York; J. Barton Garfield, New York; S. R. Lewis, Chicago; John S. Brennan, Milwaukee; Joseph Graham, New York; Charles Morrison, Boston; James A. Donnelly, New York; George B. England, New York; Bert C. Davis, Kansas City, Mo.; W. G. Snow, Boston; C. G. Fundinger, New York; H. A. Wilson, Boston; O. L. Badger, New York; P. H. Seward, New York; Thos. N. Thomson, Scranton, Pa.; A. G. Cripps, Akron, O.; J. J. Blackmore, New York; Robert Mayo, Jr., Washington, D. C.; Benj. West, New York; Thomas P. Barwick, New York; N. P. Andrus, Brooklyn; Andrew Harvey, Detroit; R. B. Hunt, New York; Mark E. Monash, New York; R.

W. Pryor, Jr., New York; Robert L. Gifford, Chicago; Homer Addams, Philadelphia; Davis S. Boydan, Boston; A. C. Edgar, Philadelphia; Geo. W. Barr, Philadelphia; W. H. Driscoll, Jersey City; Henry B. Gombers, New York; John T. Bradley, St. Louis, Mo.; C. B. Kennedy, Pittsburgh; Geo. W. Clark, New York; William D. Clark, Willimantic, Conn.; C. Kiewitz, New York; George D. Farnham, New York; S. C. Porter, New York; L. B. Sherman, New York; William Ritchie, New York; C. W. Haensel, New York; Geo. V. Greey, New York; T. H. Stevens, New York; M. F. Thomas, Ithaca, N. Y.; J. W. Kitchen, East Orange, N. J.; M. E. Winans, New York; E. F. Crawford, Oswego; N. Y.; W. G. R. Braemer, Camden, N. J.; Theo. Weinshank, Indianapolis; W. A. Birdsall, Newark, N. J.; J. P. MacFarlan, New York; C. W. Sisson, Boston; E. H. Fisher, East Orange, N. J.; G. L. Greenman, New York; G. H. Zellers, Washington; W. W. Macon, New York; C. Teran, New York; U. G. Scollay, New York; Gustav A. Dornheim, New York; Geo. D. Hoffman, Chicago; Horace C. Bushnell, New York; E. S. Storm, New York; Richard Hankin, New York; H. M. Wylee, New York; John Mosner, New York; F. M. Commer, New York; G. W. Knight, Newark, N. J.; John Harvey, New York; G. E. Grimshaw, New York; Warren Webster, Camden, N. J.; A. O. Webster, Camden, N. J.; W. C. Vrooman, Schenectady, N. Y.; F. A. Dwyer, Amsterdam, N. Y.; Daniel J. Rice, New York; G. A. Harwood, Long Island City; E. W. Barnes, Byron, Mich.; Thos. Wheatley, Syracuse; Chas. W. Gutzeit, New York; M. P. Osbourn, Camden, N. J.; S. K. Berman, New York; P. M. Richards, New York; John P. Schaffer, Pittsburgh; Harry J. Marks, New York; L. Moore, Port Chester, N. Y.; C. M. Brodnax, Brooklyn; A. M. Feldman, New York; A. W. Glessner, Chicago; R. C. Carpenter, Utica, N. Y.; Charles R. Bishop, Lockport, N. Y.; G. O'Hanlon, New York; T. M. Dick, Brooklyn; A. J. O'Neill, Brooklyn; C. F. Catillaz, New York; J. H. Kinealy, St. Louis, Mo.; John Black, Trenton, N. J.; Robert A. Keasbey, New York; James W. H. Myrick, Boston; L. Thomas, New York; Jno. K. Allen, "Domestic Engineering," Chicago; Wm. R. Shannon, "Domestic Engineering," Chicago; E. De Forest Winslow, "Domestic Engineering," Chicago; C. B. McKnight, New York; Chas. A. Miller, New York; James E. Hey, New York; E. C. Fisk, New York; James E. Dobbs, Engineering Review, N. Y.; E. E. Sorg, Weehauken, N. J.; A. A. Cryer, New York; A. C. Hall, Albany; Carl Lorentzen, New York University; L. D. Bulette, Philadelphia; D. D. Kimball, New York; Daniel Stern, Chicago; L. S. Thomason, New York; Mark Dean, Philadelphia; C. Wold, New York; W. G. Le Compte, New York; C. H. Seymore, New York; Robert A. Davis, Philadelphia.

C. G. Fundinger.

Springfield, O.—The master plumbers of this city are making an earnest effort to have an office of plumbing inspection created.

Holyoke, Mass.—The inspector of plumbing reports that he has made 3,012 inspections of old and new plumbing during the past year, and has been obliged to prosecute in but one case.

Wisconsin Master Plumbers Meet in Milwaukee

Milwaukee, Wis.—Jan. 19. About 130 master plumbers from all over the state of Wisconsin assembled here this morning in the beautiful Colonial room of the Plankinton House to hold their fifteenth annual convention, which was called to order at eleven o'clock by Pres. Jacob Schuh.

Walter W. Dusold, president of the Milwaukee association, then addressed the delegates in a few well chosen remarks expressing the hope that their visit in Milwaukee would be pleasant. President Schuh thereupon appointed Paul Schroeder, of Milwaukee, as sergeant-at-arms,

The following gentlemen were requested to act upon the various committees as follows:

Credential Committee: Jos. L. Thomas, of Green Bay; I. Toussaint, of Milwaukee; J. Trane, of La Crosse.

Auditing Committee: C. Goodman, of Kenosha; H. Lippert, of Milwaukee; P. Ryan, of Appleton.

Committee on Resolutions: F. Green, of Janesville; W. J. Meltzer, of Madison; O. A. Toner, of Oshkosh; W. R. Pugh, of Racine; W. H. Halsey, of Milwaukee.

The following Committee was also appointed to welcome and instruct the large number of new members present: G. F. Reeke, of Green Bay; W. Highland, of Madison; F. P. Houghton, of Manitowoc; I. Toussaint, of Milwaukee; W. W. Dusold, of Milwaukee.

President Halsey, of the National Association being present, was called upon for a few remarks and congratulated the association briefly upon its membership, urging still stronger individual effort and support for the good of the organization, and ended by extending the courtesy of the National Association to all.

It was moved, seconded and carried that the convention adjourn until 2 p. m., to allow the various committees to perform their duties.

Tuesday Afternoon.

The afternoon session was called to order at 2:30 by the president, and the members responded to roll call by Secretary Murphy. Several communications were read after which it was moved, seconded and carried that this meeting express itself as being in favor of Spokane, Wash., for the next national convention.

President Schuh addressed the convention during the afternoon session and strongly recommended all who could, to visit the offices of the National association, at 155 Mason street, and get some idea of the vast amount of work done. He also advised the members to use their best efforts in bringing about the adoption of plumbing rules and inspection in the various cities of the state. He stated that Wisconsin had added six more cities to the Red Book, making a total of 60 for Wisconsin, and in conclusion expressed his thanks to all the various officers and board of directors for valued assistance rendered him.

The convention then went into executive session, lasting until after 5 p. m., during which routine business was transacted and discussions took place for the

benefit of the craft, and the meeting finally adjourned until 9:30 Wednesday morning.

Wednesday Morning.

The morning session was called to order at 10:45 by President Schuh, who, after a few preliminary remarks asked for the reports of committees.

The **report of the Auditing** committee was, on motion, accepted. Under the head of **New Business** the committee on resolutions reported adversely upon issuing printed certificates of memberships, which report was also accepted.

The question of **employers' liability and insurance** was referred to the incoming executive committee.

The association then arose and went into executive session lasting until 12:20 o'clock.

Wednesday Afternoon.

The afternoon session was called to order at 3 o'clock by President Schuh.

It was moved and seconded that the incoming secretary take up the matter of state plumbing laws with states having such laws, and report at the next convention. Motion carried.

At this point the **Mayor of Milwaukee, Hon. D. S. Rose,** arrived and upon being introduced by Pres. Schuh, delivered a vigorous and eloquent address of about half an hour.

The mayor had hoped to meet all of Milwaukee's plumbers at the convention, for he knew of no craft he would take more pleasure in "roasting." He stated that the value of building last year in Milwaukee was in round numbers something like $10,000,000, and that for Milwaukee he looked forward to a busy coming year. He invited the visitors to go over the city and observe its varied industries, stating people came from all over the world to see Milwaukee and learn of her business conditions; and in conclusion said, "If there is anything you want, boys, have the plumbers get it for you—They can!"

A rising vote of thanks was tendered the mayor for his able address and he left the hall amid rounds of applause and cheers.

Election of Officers.

The following **board of directors** were elected for 1909: J. Schuh, of Milwaukee; L. Sontag, of Sheboygan; E. Green, of Janesville; I. Toussaint, of Milwaukee; G. F. Reeke, of Green Bay.

Officers of the association elected for the following year are:

President, Jacob Schuh, of Milwaukee;

Vice-President, G. F. Reeke, of Green Bay;

Secretary, I. Toussaint, of Milwaukee;

Treasurer, F. E. Green, of Janesville.

The following named gentlemen were elected as delegates at the National convention: P. H. Ryan, of Appleton; A. Voelz, of Milwaukee. Alternates: H. Lippert, of Milwaukee; W. J. Hyland, of Madison.

A vote of thanks was tendered retiring Secretary Phil. H. Murphy, to which he gave a heartfelt response. Also **a vote of thanks was extended to the press,** and to the managers of the Plankinton House. The convention then adjourned at 6 P. M.

Delegates in Attendance. The following delegates were present from various localities:

Antigo: Antigo Plumbing Co.

Janesville: George & Clemons, F. E. Green and Chas. Snyder.

Kaukauna: W. H. Haworth.

Kenosha: C. H. Goodman, Kaelber & Kraft.

Kiel: J. M. Duecker.

La Crosse: Baker & Niebuhr, F. M. Bronson & Son, Cavanaugh & Smith, Thill & Lapitz, J. A. Trane.

Madison: W. J. Hyland, A. Metz, Schwoegler & Bliss.

I. TOUSSAINT, OF MILWAUKEE,
Secretary-elect of the Wisconsin Master Plumbers' Association.

Manitowoc: F. P. Houghton.

Merrill: Merrill Plumbing and Heating Co.

Milwaukee: Mr. Borkenhagen, W. E. Dougherty, E. Downer, Mr. Doyle, W. W. Dusold, Wm. Egan, Mr. Freudenfield, P. A. Fuchs, F. A. Goll, Wm. E. Goodman, Mr. Grassler, W. H. Halsey, P. Jensch, B. Julien, Jos. Junek, E. F. Kietzmann, F. Kostlan, Mr. Krassman, Mr. Kuczynski, Lindemann & Schuman, Lindmer & Brenner, Hugo Lippert, A. J. Maag, Mr. Marven, A. Martin, G. Mastenbrook, Wm. Meister, E. Miller, E. Mueller, R. Nuegebauer, M. O'Leary, D. Polacheck, Mr. Scheurell, Jacob Schuh, Schuman & Luebke, A. R. Schwind, L. Soergel, Stemper Bros., D. Stern, Stolberg & Co., H. W. Theis, I. Toussaint, Trebs & Dresczynski, Jos. Weishan, H. Welters, Wenzel & Henoch, J. R. Williams, Wittig Plumbing Co., O. P. Zimmerman, J. Belz, W. C. Boettcher, Hugo Borchert, A. S. Dahl, Bert Dale, E. Diel, Wm. Erbach, Wm. Esser, L. Friend, F. Griebel, Wm. Huebner, P. F. Kenney, W. Kraayvanger, F. Kuetemeyer, H. A. Luedke, Phil. H. Murphy, J. E. Robertson, John S.

Savage, Mr. Scheureil, Schroeder & Suelflow, B. Tank, C. Voelz & Bros. and Herman Wegner Herman.

Appleton: W. S. Patterson Co., Ryan & Long.

Ashland: W. A. Reinhardt.

Beaver Dam: J. J. Newman.

Beloit: P. A. Wolter.

Berlin: A. Wilson.

Eau Claire: Eau Claire Cornice & Htg. Co.

Elkhorn: Magill & Brandt.

Green Bay: E. Garot, C. Hanson & Co., G. F. Reeke, J. Thomas & Sons.

Monroe: F. T. Burke.

New London: W. S. Patterson Co.

Oshkosh: M. J. Kelly, F. F. McNickol & Co., P. J. Maus, J. W. McAllister, Mueller Bros., Toner Plumbing and Heating Co.

Plymouth: Sanders and Kurth.

Port Washington: J. P. King.

Racine: W. R. Pugh.

Sheboygan: E. Alday Jr. & Co., Henold Bros., Huebner Co., L. Sontag, Vowinkel and Son.

Sheboygan: Otto Junck, Koepsell Bros.

S. Milwaukee: A. W. Kuhn, Wm. Whelan.

Sparta: N. F. Palen.

Two Rivers: F. R. Dawson.

Waukesha: J. J. Klock, W. A. Kramer, T. C. Moran.

West Allis: Russel Parton Hardware Co., Polacheck & Johnson.

West Bend: A. G. Fuge.

Convention Notes.

That veteran plumber and former treasurer for many years, of the National Association of Master Plumbers **W. E. Goodman** was present in a very happy frame of mind and apparently without a care in the world. Many were the hearty handshakes and kindly words of welcome vouchsafed him.

"Anybody want to pay their dues?" That's Murphy—Philip H., Secy. of the State association, who has troubles with his trunk.

The Wisconsin Master Plumbers' association boasts of a membership of about three hundred and has added some thirty new members to its number during the past year. It has made a gain of over $600 in funds and its financial affairs are in sound condition. The prospects are bright for its becoming a much larger body in the future. The past year has shown a steady growth very pleasing and the present condition is a credit to all concerned.

Phil. Silver, representing the **Glauber Brass Mfg. Company,** of Cleveland, was present, vigorously, as usual, advancing the interests of his concern.

During the morning session of Wednesday **Frank Cannon,** Secretary of the Citizens Business League, favored the association with a very mirth provoking, instructive and entertaining address of about fifteen minutes and was greeted with the heartiest applause at the close.

Entertainment Features.

On Thursday night several theatre parties were given at some of the many places of amusement in the city.

The following committee on entertainment: Messrs. Henoch, Stempler, Gribel, Fuchs, Polacheck, Friend and Schroeder, arranged for Wednesday evening, a "smoker" and banquet at the Elks club. The musical numbers were furnished by a quartette and De Lorenzo's Italian orchestra. Several vaudeville artists displayed much ability in various capacities and drew forth much merited applause.

The banquet hall was suitably and tastefully decorated and the many courses served, produced a gratifying sense of satisfaction to all.

Chas. H. Denison.

Association News

Milwaukee, Wis.—The Master Plumbers' Association of this city held its annual meeting on Tuesday evening, January 5, and elected the following officers: President, W. W. Dusold; vice-president, R. P. Neugebauer; secretary, I. Toussaint; treasurer, A. J. Maag; sergeant-at-arms, Paul Schroeder.

New Orleans, La.—The Master Plumbers' Association of this city held its annual meeting on Monday evening, January 11, and elected the following officers for the ensuing year: **President, R. V. Lambert; vice-president, H. S. Charlton;** treasurer, J. C. Flynn; secretary, J. Loeffler; sergeant-at-arms, M. Birtel.

Washington, D. C.—At the last meeting of the Master Plumbers' Association of this city the following officers were elected for the present year: Samuel Artz, president; Harry T. Suit, first vice-president; F. W. Quinter, second vice-president; Ed. J. Hannan, treasurer; William Conradis, secretary, and William Shields, sergeant-at-arms. The retiring president is Joseph A. Herbert.

Chicago, Ill.—The Chicago North and West Side Master Plumbers' Pleasure Club at its annual meeting elected the following officers for the ensuing year: President, Joseph Scheuer; vice-president, Peter Feltman; secretary, W. G. Wood; treasurer, Fred Grosch; financial secretary, A. C. Peterson; business agent, Fred J. Wagner. E. C. Wagner, Fred Grosch and W. F. Bahn were elected to fill vacancies on the board of directors.

Camden, N. J.—The Master Plumbers' Association of this city held its annual meeting and election on Thursday evening, January 7. The officers who were elected and introduced to their new offices were as follows: **President, Edward F. Kelley; vice-president, Frank Zimmerman; secretary, Edward Conners; treasurer, Henry G. Johannes; board of directors, George Leathwhite, chairman; Robert Macintosh, James S. Walton.** As members for the examining board of plumbers for the board of health were recommended Henry G. Johannes and George F. Hammond. The meeting was well attended, nearly every member being present. Some of the pleasant features of the meeting were an excellent speech by the president on association matters, and a most enjoyable talk on the fraternity of the association by Mr. Leathwhite, the father of the association.

Newark, N. J.—The Master Plumbers' Association of this city has elected the following officers and committees for the ensuing year: President, Louis Maier; vice-president, A. H. Rowe; recording secretary, H. F. Baillet; financial secretary, Wm. Jacobi; treasurer,

F. J. Stein; sergeant-at-arms, Robt. Berla. Board of trustees: Ira Budd, M. Brady and R. Thrush. Standing committees: Conference and trade protection: S. F. Wilson, Chas. F. McGuire, R. A. Koether, J. F. Hanley, Jacob Rau. Printing and supplies: H. F. Baillet, Wm. Jacobi, F. J. Sturn. Finance: M. T. Banderman, Jas. Mooney, Geo. Baumann, Jr. Apprenticeship: Dan M. Brown, M. J. Brady, Henry Mersfelder. Sanitary: S. F. Wilson, Ch. E. Bond, R. B. Schmidt. Entertainment: A. Selden Walker, Ira Budd, Robt. Berla, Jos. Sturn, Walter I. Champlin. The association had a very successful year, an increase of nineteen in membership, and activity in all directions.

Boston, Mass.—The annual meeting and election of officers of the Master Plumbers' Association of Boston and vicinity was held in Elk's hall on Thursday evening, January 14, and officers were elected as follows: **President, David Craig; vice-president, John J. Vogel; treasurer, Thomas J. Tute; financial secretary, John W. Cosden; recording secretary, D. T. Harrington;** legislative committee—David Craig, C. H. Cronin, E. C. Kelley, E. W. Cox and H. H. Collins; auditing committee—Daniel Shannon, J. W. Crawford and F. F. Muldowney. The officers were installed by Edward C. Kelley. Among the special guests of the evening were W. J. Hyland, of Springfield; James Neagle, of Taunton, and Charles T. Byrne, of Chicago. The annual election properly falls on the fourth Thursday in December, but that being Christmas eve last year, the election was postponed until this month, and held in conjunction with the installation. Reports of the officers were submitted and other business incidental to the annual meeting was transacted. There was a large attendance.

Pittsburg, Pa.—The annual election of the Master Plumbers' Association of Pittsburg and vicinity last week resulted as follows: **President, H. L. DeWitt; first vice-president, P. J. Montague; second vice-president, Edward F. Flannigan; treasurer, Frank McKnight, and secretary, O. R. Cratty.** The election of the executive committee resulted in the selection of the following gentlemen: H. L. DeWitt, P. J. Montague, Edward F. Flannigan, Frank McKnight, O. R. Cratty, Thomas J. Scanlon and S. S. White. The above officers and the executive committee were elected to fill these offices for the present year. At this, the annual meeting, no delegates to the national or state conventions were elected, but will be named and voted on at a later date, as is invariably the custom here. The annual reports of the association officers were read and all adopted unanimously. These reports showed that every branch of the organization is in a thriving condition. The reports of the finance committee and also of the membership committee were considered particularly good. As has been stated in a previous issue, the local association lost many members during the year through the formation of the Southwestern Pennsylvania Master Plumbers' Association, which took all of the many members from a score of the cities and towns in Westmoreland and Fayette counties, so that the membership at the present time is not so large as it was at the beginning of 1908. There have been, however, a large number of new local members admitted, and at the present rate it will be but a short time until practically all of the master plumbers of this city and vicinity will be enrolled in our local organization.

Wholesale Plumbing

The Indiana Supply Co., of Indianapolis, Ind., is building a new warehouse which will double its warehouse capacity. The building is to be completed by February 15.

During the past year the manufactured stock of the Standard Sanitary Mfg. Company of Michigan in Detroit has been sold and such machinery as could be used elsewhere has been shipped to other plants of the Standard Sanitary Manufacturing Company of Pittsburg. The real estate, buildings and remaining machinery has now been sold to the Timkin Roller Bearing Axle Company, of Canton, O., and the transfer has been made.

The Boston Plumbing Traveling Salesmen's Association will hold its winter meeting and dinner Saturday evening, January 30, at Café "Louis," Fayette Court, near Washington and Roylston streets, Boston. A large attendance at this meeting is desired by the committee in charge as in addition to electing new officers for the coming year some slight changes in the constitution and by-laws will be balloted on. A prominent feature of the entertainment after dinner will be furnished by C. H. Johnson, who is known in his travels as a magician of no mean ability.

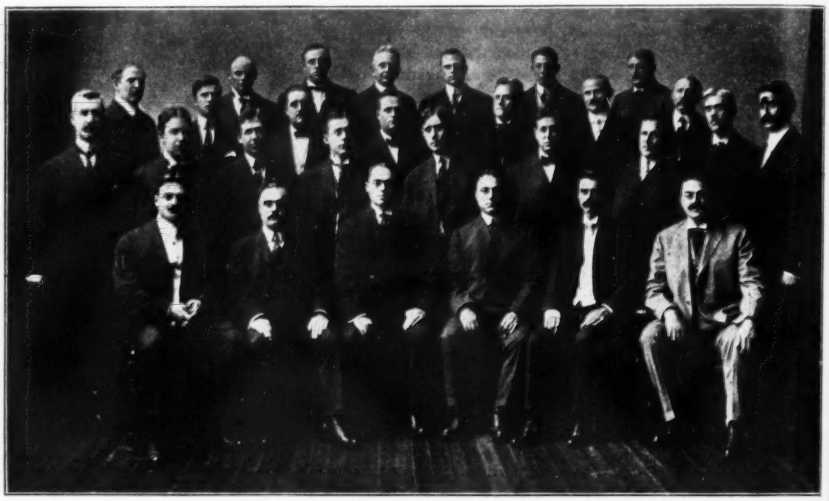
Paul Blatchford, secretary of the Central Supply Association, announces that arrangements have been made to hold the next regular meeting of the association at the Victoria Hotel, corner of Michigan avenue and Van Buren street, Chicago. The Victoria has just been remodeled and its handsome assembly room will make a most desirable and convenient meeting place for the Central Supply Association. The date of the meeting is Wednesday, February 24, and the executive committee will hold its customary meeting at the same place the day before, i. e., Tuesday, February 23.

The Central Supply Company, of 312-316 Third street, South, Minneapolis, Minn., on Thursday evening, January 7, held its annual convention with a banquet at the Nicollet hotel to forty of its employes. C. B. Hoy acted as toastmaster, and short addresses were made by P. J. Frey, E. J. Seitz, A. L. Potter, L. C. La Fleur, A. B. Clausen, L. W. DeVault, P. J. Riordan and several members of the office force. J. H. McElroy, of Billings, Mont., also gave a short and instructive talk. Musical selections were rendered by a quartet of artists from the twin cities. It was, in short, a most pleasant and enjoyable evening.

A new jobbing house in plumbing and heating supplies has just been opened in Detroit, Mich., under the name of the Kimball-Eisenberg Company, at 216 Jefferson avenue. The new company's application for membership in the Central Supply Association has been signed by every jobber in Detroit. The officers of the company are P. L. Kimball, formerly in charge of the quotation department of the Standard Sanitary Manufacturing Company, of Pittsburg, and Edw. N.

Eisenberg, for a number of years assistant manager of the Detroit plant of the Standard Sanitary Manufacturing Company, of Michigan. Both of these gentlemen have severed their connections with these companies, and neither the Standard Sanitary Manufacturing Company, of Pittsburg, nor the Standard Sanitary Manufacturing Company of Michigan, nor any person connected with these concerns has any interest in this new concern.

The annual school of instruction and conference meetings of the salesmen of the H. Mueller Mfg. Company has closed and the men are now again on the road. The meeting was held at the company's general offices at Decatur, Illinois, beginning December 28th and lasting two weeks, during which time there was a regular program of addresses on various subjects, discussions of points of the goods, business possibilities of 1909, etc. New goods which the company will bring out were demonstrated and their advantages explained by the factory experts. The social side of the annual meeting was enjoyable, consisting of dinner and theater parties for the salesmen. The annual meeting of the "49" Club was a hilarious affair. Four new salesmen got the degree: M. G. Wasson, N. E. Sippell, E. B. Cameron and F. L. Hays, Jr. The members of the club welcomed back to their ranks T. F. Leary, who was recently with the L. Wolff Mfg. Company, of Chicago. He will be with the Mueller Mfg. Company in the future. The salesmen in the western territory are: E. B. Cameron, W. B. Ford, W. N. Dill, Frank L. Hays, Jr.; S. E. Hamblin, W. C. Heinrichs, M. F. Kirkwood, J. H. McCormick, F. B. Mueller, F. J. Murphy, D. E. Rowley, James Smith, M. G. Wasson, M. T. Whitney and T. F. Leary. The salesmen in the eastern territory are: C. T. Ford, G. A. Caldwell, R. M. Hastings, W. F. Hennessy, A. F. Kice, W. F. McCarthy, A. C. Pilcher and N. E. Sippell.



Officers and salesmen of the H. Mueller Mfg. Co., of Decatur, Ill., at their annual meeting in that city. Reading from left to right, they are:

Front row—O. B. Mueller, P. Mueller, A. Mueller, R. Mueller, H. Mueller and F. B. Mueller.

Second row—F. J. Murphy, W. B. Ford, W. N. Dill, A. F. Kice, W. C. Heinrichs, Jas. Smith, F. L. Hays, Jr., T. F. Leary and W. F. McCarthy.

Third row—Chas. Ford, E. B. Cameron, W. F. Hennessy, D. E. Rowley, M. G. Wasson, R. M. Hastings and M. T. Whitney.

Fourth row—S. E. Hamblin, N. E. Sippell, C. A. Caldwell, A. C. Pilcher, J. H. McCormick and M. F. Kirkwood.

N. O. Nelson, president and founder of the N. O. Nelson Mfg. Company, of St. Louis, Mo., on Saturday evening, January 16, gave the twenty-third annual banquet in celebration of the inception of profit sharing by his company. The event took place at Lippe's restaurant in St. Louis and five hundred persons, including employes, customers and professional men, were Mr. Nelson's guests. The profits are now shared with both employes and customers, and the amount divided this year was $125,000, which was considered a most favorable showing for a dull year. After full justice had been done to an elaborate and well prepared menu, the flow of eloquence commenced with the leading address of the evening, which was delivered by President N. O. Nelson, who gave the history of the profit-sharing plan. This system was inaugurated in 1886 and it was carried out as follows: After deducting 6 per cent. interest on the capital invested, the company distributed the remainder of the profits among the employes, of whom the company then had about 200. The policy of sharing profits with customers began in 1905. The company now has 700 employes and 1,000 or more customer stockholders. "The plan of sharing profits with customers," said Mr. Nelson, "gives the capital, except mine, for which I charge nothing, 6 per cent. dividend. We divide the remainder between the customers and employes by allowing about one and one-half times as large a dividend on the gross profit on customers' purchases as is allowed on wages. A customer who buys $10,000 a year of such goods as average 10 per cent gross profit, which is $1,000, would, at the dividend rate of 1907, 45 per cent, receive $450. An employe receiving a salary of $1,500 a year, at the 1907 rate, 30 per cent, would also get $450. A customer buying $2,000 a year of the class of goods averaging a profit of 15 per cent

gross, $300, would, at 45 per cent, receive $135. A laborer receiving $600 a year would, at 30 per cent, receive $180. We have been engaged in profit-sharing for twenty-three years and shall continue to do it. The idea is right, it is good citizenship, good morals and good business." John Foy, manager of the Los Angeles branch of the Nelson Company, in his speech gave an interesting report of the business the company is doing on the Pacific coast. Jeremiah Sheehan, ex-president of the National Association of Master Plumbers, and founder of the St. Louis Master Plumbers' Association, also made a pleasant and interesting speech. Among the guests were the Reverend Doctor Henry Stiles Bradley, of St. John's M. E. Church; Rabbi Samuel Sale, of Shaare Emeth Temple, and the Reverend John W. Day, pastor of the Church of the Messiah. These gentlemen and many customers gave felicitous talks to Mr. Nelson, his company and its employes, in which the profit-sharing plan was commended. Letters expressing regret of not being able to attend the banquet were received from Father Timothy Dempsey, of St. Patrick's Church, and former Governor Joseph W. Folk. The pleasant event began about six o'clock and lasted until midnight.

A correspondent on the Pacific coast writes: "What the year is going to bring forth no one can tell, but almost everybody is optimistic, at least to the extent of a fairly good business, and many say we will have a very good year. As for my opinion, I hardly know what I think. While buying has been pretty fair during the last quarter, it has, of course, not yet commenced this year; it rarely does so early in the year. But so long as manufacturers are hungry for business at low prices, just so long will buyers hold off on quantity orders. The confidence we need more than anything else is a firm stand by the manufacturers as a whole for legitimate prices. I am convinced that such a stand would have a very beneficial effect. Stocks are low, and a firm market with increases in prices on some lines would stimulate buying all along the line, from consumer and up."

Wholesale Heating

Abendroth Bros., of 109-111 Beekman street, New York City, announce that E. O. Haskins has succeeded Llewellyn Moore as manager of their boiler department in that city.

Klipfel Manufacturing Company, of Chicago, has moved its general offices and factory from 74-76 West Lake street to 44-50 North Carpenter street, where it has secured more commodious quarters for its growing business.

The Cameron Schroth Cameron Company, of 189-193 Michigan street, Chicago, announces the appointment of W. E. Mellinger as its Michigan representative. Mr. Mellinger will make his headquarters at 244 Auburn avenue, Grand Rapids, Mich.

Electric Heat Regulator Company, of Minneapolis, Minn., announces that it has moved its general offices from the Phoenix building to the New Palace building in that city. This company also announces that it has opened a branch office at 140 Endicott arcade, St. Paul, Minn., in charge of S. L. Titus, formerly connected with the Allan-Black Company, of St. Paul.

Geo. B. Limbert, of 49-55 Fulton street, Chicago, on Thursday, January 21, had his iron-pipe and steam appliance business incorporated under the name of George B. Limbert & Company, with a capital stock of $200,000. The incorporators were: George B. Limbert, Joseph H. Aukebrant and Wm. J. McKeen.

The Kellogg-Mackay Company is the name under which the Kellogg-Mackay-Cameron Company, of 19-33 West Eighteenth street, Chicago, will be known in the future. The company made this change after having acquired the interests of some former members. The change in name will make no difference in the conduct of the business.

Announcement is made of the consolidation of the American Blower Co., of Detroit, Mich., and the Sirocco Engineering Co., of New York. The magnitude of this move is only in keeping with the rapid growth and development of the American Blower Co., one of Detroit's leading industries. All business will hereafter be transacted under the name of American Blower Co., with main offices at Detroit, Mich. The personnel of the management of the new company is as follows: James Inglis, president, formerly at the head of the American Blower Co.; William C. Redfield, the vice-president, was president of the Sirocco Engineering Company; Charles H. Gifford, the treasurer, was until about a year ago general manager of the B. F. Sturtevant Co.; F. R. Still, the secretary, is well known, especially among engineers, as chief engineer of the American Blower Company.

The fifth game of indoor baseball of the Chicago Steam Trades' Indoor Base Ball Association occurred in the gymnasium of the New Illinois Athletic Club, Tuesday evening, January 19th, following a supper in the Grand Dining Salon. The line-up was as follows:

Positions	Contractors	Salesmen
Catcher,	Horton	Decker
Pitcher,	Cook	Stackhouse
Right short,	Dickinson	Roberts
Left short,	Graves	Dillman
First base,	Capron	Lamb
Second base,	Douglas	Jackson
Third base,	Lamb	Drury
Fielder,	Newport	Scudder
Fielder,	Allen	Keating
Extra,	Hayes,	

In the absence of Keeney, the sporting editor and referee, McLelland umpired the game. McLelland's clarity of vision enabled him to take in the whole field at a glance and to make some very fine decisions. This earned for him the claim that he was an umpire of the very first rank, while those with a grievance said that he was very rank. Graves bowled a very good game from the pitcher's box. Allen, another new player, did very creditable work both in the field and at the bat, but both of these players were unable to save the day for the Fitters. Three pitchers, Graves, Newport and Cook, fell by the mighty onslaught of the Salesman.—When the smoke of battle cleared, the score showed 49 to 26 in favor of the Salesmen.—Wasn't it awful?

Metal Market

New York Metal Market, January 19.

Copper, Prime Lake	$14.37½
Copper, Lake, Arsenical brands	14.12½
Copper Electrolytic	14.00
Antimony, Cookson's	8.10
Lead	4.20
Straits Tin	27.80
Spelter	5.15

Chicago Iron Market, January 21.

Southern, No. 2 Foundry	$17.35
Northern, No. 2 Foundry	17.00
Lake Superior Charcoal	19.50-20.00

January 21, 1909:

Foundry iron was the same price as the week previous
$5 less per ton than the year previous
Copper was the same price as the month previous
⅜c more a lb. than the year previous

New York, N. Y.—In nearly every direction the iron and steel markets are quiet and no business of any magnitude has been placed, says "The Iron Age." While some of the great leaders of the industry frankly avow their belief that no market buying movement need be expected during the first half of the year, there are other interests, notably in the central west, which are confident that business will be much brisker in sixty to ninety days. Some of the smaller and medium sized plants are fairly busy, but it is claimed that they are getting more than their share by cutting prices. In amount these concessions are not serious, but they are irritating just the same. Railroad buying is still below expectations and until it develops into normal volume the heavy lines must be content to run along as they have done for some time.

Obituary

Alfred R. Wolff, author of "Ventilation of Buildings" and "The Heating of Large Buildings," passed on at his home in New York City on Wednesday, January 6, in his fiftieth year. He was born in Hoboken, N. J., on March 15, 1859, and received his education in that city, graduating from Stevens' Institute of Technology in 1876. He started a general engineering practice in 1880, and took up the design of heating and ventilating plants, acquiring an extensive practice, which covered a period of 28 years. He made the mechanical designs for a great number of large buildings in all parts of the country, and his good work contributed much to the high standing heating and ventilating engineering has attained as a special calling.

William W. Hunt, who had been in the plumbing business in Amherst, Mass., for more than half a century, passed on at his home in that city Friday, January 8, in his seventy-ninth year. He had been in poor health for some time, but his condition had not been looked upon as serious until within a fortnight of his death, when he was taken with an attack of neuralgia of the heart. Mr. Hunt was born in North Amherst, March 26, 1830. He was a son of the Rev. William W. Hunt, who was the first minister of the North Amherst Congregational Church. He was educated at the Amherst academy, and while a boy went to West Brookfield, where he learned the plumber's trade. In 1853 Mr. Hunt returned to his native town and started in the plumbing business for himself on practically the same site that is now occupied by the Mutual Plumbing and Heating Company. He continued in business until August 1, 1907, when he sold out to C. R. Elder. In 1876 he built the Hunt block, the biggest business building in the town, and it still continues to be the largest and best mercantile building there. He is survived by a widow, but by no other near relatives.

Personal

T. J. Nagle, "The Man from" Hays Mfg. Co., of Erie, Pa., was a visitor to the Chicago trade this week.

Geo. H. Bailey, president of the Bailey-Farrell Mfg. Co., of Pittsburg, Pa., was in Chicago this week and called on some of his many friends in the trade.

A. G. Reeves, son of W. G. Reeves, a pioneer master plumber of Cape May, N. J., has just been appointed to the newly established office of plumbing inspector of that place.

Plumbing Legislation

Washington, D. C.—The Commissioners of the District of Columbia have approved the recommendations made by Chief Inspector of Plumbing Henry B. Davis, amending the gas fitting regulations, regulating the construction, installation and inspection of gas water heaters. The amendment which takes effect today, January 23, reads as follows: "All gas water heaters shall be provided with a door through which the gas burner and all of the heating surface shall be exposed for the purpose of lighting and cleaning, and said heaters shall be provided with a flue pipe to carry off the noxious odors emanating therefrom, to the outer air. The use of pilot lights on water heaters is absolutely prohibited, except for large water heaters automatically operated by thermostat. The shuttle on the mixing valve shall be so constructed as to prevent the possibility of disarrangement due to carelessness, expansion or contraction, yet be accessible and easily controlled. The heater shall not be set closer to the floor than 2′ 6″, measuring from the top of the burner. When complaint is made of existing gas water heaters, they shall be made to conform to the above requirements or be replaced with heaters of approved type."

Chicago, Ill.—What is said to be the largest fee ever paid to the city building department was paid Wednesday, January 20, by the Chicago and Northwestern Railroad Company, when it took out a permit for the erection of its new west-side passenger station. The estimated cost of the building is $4,000,000, and the fee was $2,859. The building will exceed in cubic space any ever erected in this city.

Master plumbers and master steam-fitters are earnestly requested to send us reports of the award of plumbing and heating contracts of $1,000 or more, as soon as these have been awarded, while the information has news value. Kindly address Editor "Domestic Engineering," 49-53 N. Jefferson street, Chicago.

Boston and New England

Rutland, Vt.—Conly & Goodland are doing the plumbing and heating work in the new residence of Dr. Pond.

Rutland, Vt.—Dunn Bros. are doing the heating work in the new Catholic church, known as the Church of Holy Innocence.

Rutland, Vt.—Mr. B. A. Adams is doing the plumbing and heating in the residence of J. S. Clark on Woodstock avenue.

Freeport, Me.—Storer Brothers have just completed the installation of a steam-heating plant in the residence of Edgar R. Smith, on Elm street.

Burlington, Vt.—F. A. Wheelock reports the Mary Fletcher Hospital job near completion. This job is one of the largest in this section this season.

Lynn, Mass.—Frank Lent, of Clark street, has accepted a position as manager of the plumbing establishment of Dahman & Quiring Company, at Newton, Kansas.

Lowell, Mass.—Carroll Brothers are installing a heating plant at the new Sacred Heart Convent, and they also have the contract for heating and plumbing the house of Edwin A. Simpson on Methuen street.

Pittsfield, Mass.—Daniel F. Farrell, of 194 North street, has been awarded the contract for the plumbing and steam heating in a new eighteen-family house being erected by McCormick & Joyce.

New Haven, Conn.—G. E. Purdue has succeeded T. R. Cotton in the plumbing and heating business at 16 Crown street, Mr. Cotton having gone to California, and established himself in the plumbing business there.

Rutland, Vt.—Guy W. Pratt has the plumbing and heating work on Dr. N. Oppenheim's new summer home at Farrisburg, Vt., nicely started. He is also doing the plumbing work on a number of residences in Rutland.

Fall River, Mass.—An unsuccessful attempt was made a few days ago to break into the safe at the plumbing shop of J. E. Chabot at 1460 Pleasant street. The men were evidently scared away before they had completed the job.

Rutland, Vt.—W. W. Ward has leased a building at 4 South Main street for the purpose of carrying on a plumbing and heating business. He is desirous of receiving catalogues and price lists from manufacturers and jobbers.

Plainfield, Conn.—Charles E. Barber, Everett H. Dean and Harriet Barber, all of Central village, have filed articles of incorporation as the C. E. Barber Company, organized to engage in the hardware and plumbing business.

Southport, Conn.—Casey & Morris, of Bridgeport, Conn., have purchased the old established plumbing business of M. V. Woodward in this town, and will take possession at once. Mr. Woodward will retire from business on account of poor health.

Burlington, Vt.—A new plumbing and heating shop has been opened in the rear of the Strong building, on Winnoski avenue. The sign over the door reads: "The Queen City Plumbing and Machine Co." The company would like to receive price lists and catalogues from manufacturers of plumbing and heating goods.

Hartford, Conn.—William L. Mahoney is suing Sherman W. Freeman to recover $543.39, which he alleges is due on a bill for installing heating plants in two houses owned by Mr. Freeman. Mr. Freeman maintains that the work was not satisfactory, and he has brought a counter suit against Mahoney for damages to the amount of $2,000.

The Misses Kennelly, daughters of John W. Kennelly, a prominent master plumber of Springfield, Mass., and some of their friends. Photograph by our Mr. Winslow.

New Jersey

Millville, N. J.—Frank M. Bullock is placing a steam heating equipment in the new Episcopal church here.

Millville, N. J.—P. Brandriff is engaged with the installation of a heating plant in the new Catholic church here.

Holly Beach, N. J.—C. A. Kilmer & Co. has contracted for the plumbing in a residence at Riverton, N. J.

Millville, N. J.—John Ferrario has lately completed the hot water heating work in two new residences in Millville.

Wildwood, N. J.—Koeneke Brothers have several plumbing contracts in residences for F. E. Hamell, T. J. Rose and Frederick Zeigler.

Cape May, N. J.—Wm. F. Brown has secured a contract for placing the steam heating equipment in a building here for Joseph Wilson.

Wildwood, N. J.—Clegg & Law have an excellent contract on their books for the plumbing and hot water heating in the Sea Crest hotel here. They are also placing the plumbing in six new apartments at Wildwood Crest.

Holly Beach, N. J.—A new plumbing establishment has been opened here by Charles F. Wanner, on Rio

Grande avenue. He would appreciate receiving catalogues from manufacturers and jobbers of plumbing and heating goods.

Cape May, N. J.—W. T. Chambers, Jr., a courageous young master plumber of this place, is erecting a new residence which he soon hopes to occupy.

Holly Beach, N. J.—Geo Wigham & Co. have engaged in the plumbing and heating business and have established themselves on Youngs avenue. They would appreciate receiving catalogues and other descriptive matter from manufacturers and jobbers of plumbing and heating goods.

New York News

Keesville, N. Y.—Washer, Quinn & Clifford Company is doing the plumbing work in the Trembleau Hall Hotel.

New York, N. Y.—Richard Winter, formerly at 204 East Ninety-ninth street, has moved his business across the street to number 209.

New York, N. Y.—B. J. Foster, a master plumber of 250 West Thirty-fifth street, has opened a branch of his business at 604 West 145th street.

New York, N. Y.—Louis F. Mayer, formerly of 348 West 145th street, has moved his plumbing business into more commodious quarters at 64 Bradhurst avenue.

Bayshore, L. I., N. Y.—E. R. Udall reports a good season's work in both the plumbing and heating departments. Among some work he is about to install is a new steam heating plant in the Congregational church.

Brooklyn, N. Y.—A. G. Schaedlich, of 3020 Atlantic avenue, has been awarded the contract for plumbing four new residences on Vermont street. Mr. Schaedlich has just finished a number of good contracts in the city.

Port Henry, N. Y.—Gebo & Tobin are busy with the plumbing and heating at Dr. Sherman's residence at Crownpoint, N. Y. They have recently finished the installation of four pneumatic water pressure systems in their locality.

Plattsburg, N. Y.—W. B. Moores is installing a plumbing and steam heating system in Judge H. D. Kellogg's residence at Valcour, N. Y. The water is taken from the lake by means of a patented pneumatic water supply system.

Bayshore, L. I., N. Y.—J. H. Newbury has a nice share of work on his books. He will plumb twelve new residences at Brightwaters for the T. B. Ackison Construction Co. He also has three buildings in Bayshore for Mr. Kirkup.

Ticonderoga, N. Y.—A plumbing and heating establishment has recently been opened here, with Wm. Malaney's name on the sign. The new establishment is looking up the latest price lists and catalogues along plumbing and heating lines.

New York, N. Y.—Latz & Meyers is the style of a new firm in the plumbing and heating field with suitable quarters at 1705 Third avenue. H. A. Latz and S. Meyers compose the firm. Mr. Latz also maintains a business on Fifty-first street where he has been located for some time.

Whitehall, N. Y.—Jas. Doren's Sons have landed the work along the plumbing and heating line at the new Masonic Temple. Frank Nebenburg has charge of the plumbing and heating end of the business, and is being kept rather busy this season.

Freeport, L. I., N. Y.—J. J. Albin, of South Main street, is about to install the plumbing and a hot water heating system in a new residence for Mrs. J. J. Taylor. Mr. Albin is also engaged with similar work in a number of bungalows at Woodcliffe.

New York, N. Y.—Byrne & Murphy, on Seventy-eighth street, have been successful in landing the plumbing contract for the new Ritz-Carlton hotel to be erected at Forty-sixth street and Madison avenue. About $60,000 worth of material will be installed.

New York, N. Y.—William Klein, a well known master plumber of West 145th street, and his brother Nathan, who has been in business in the Bronx for a number of years, have opened a new establishment at 512 East 165th street. The new business will be known as Klein Brothers.

Rockville Centre, L. I., N. Y.—John W. Petry has some nice work on his books at present among which the following may be mentioned: The plumbing and heating in the new Bank of Rockville Centre building, plumbing in the public school annex, and the plumbing in seven stores and flats at Cederhurst for Mrs. White.

Plattsburg, N. Y.—The J. A. Freeman Company's busy season is still on. Mr. Spear, who has charge of the plumbing and heating work, has the $11,000 plumbing and heating contract at the Y. M. C. A. building nicely under way. The plumbing and heating in the Troy Conference Academy at Poultney, Vt., is very near completion.

New York, N. Y.—William Vail, Inc., of 108 University place, has secured the contract for the plumbing in three buildings on the Edward S. Harkness estate at New London, Conn., consisting of farm house, cow barn and dairy. The contract for the installation of steam heating system in the dairy was also awarded to William Vail, Inc.

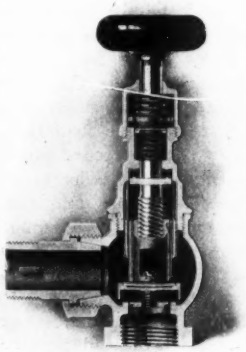
New York, N. Y.—H. Rothstein, of 1593 Second avenue, has been fortunate in securing a good share of work lately. Among the contracts he is about to commence are two hot water heating installations at 242 and 329 East Eighty-third street and another on Eighty-fifth street. He also has a big sewer job on West Twenty-eighth street.

Amityville, L. I., N. Y.—Charles A. Axtmann, whose plumbing and heating establishment on Broadway was completely destroyed by fire some weeks ago, will be in business again near the old stand as soon as suitable quarters are secured. Mr. Axtmann's property loss by the fire amounted to about $1,600, including some tools over sixty-five years old, which he valued highly on account of their age.

Wautagh, L. I., N. Y.—Corodon Norton enjoys the distinction of being the only master plumber and fitter in his town. He is at present engaged with a number of contracts that will keep him and his mechanics busy for some weeks. Among these may be mentioned the plumbing and heating in two residences for Birdsall

Valve Reputation.

The steam fitter generally finds after a job has been completed that the "bargain" valves he used are the very factors which make the owner dissatisfied with the work. A cheap valve is an expensive economy, or no economy at all.



Norwall Packless Radiator Valve, (Angle pattern), a good example of a trustworthy fitting.

IDEAL Valves like IDEAL Boilers and AMERICAN Radiators enjoy a reputation for trustworthiness. They can always be depended on. The first, last and only consideration in their manufacture has been quality. They are made on correct principles, and never fail to give satisfactory service.

AMERICAN RADIATORS & IDEAL BOILERS

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

Jackson and similar work in a residence for W. S. Merrill in Seaford. He will also plumb Mr. Simmons' house in Seaford.

Babylon, L. I., N. Y.—S. Ohlmiller is erecting a new building on Deer Park avenue. The building will be a two-story frame structure, covering a ground area 40x80 feet, and built along modern lines. Two stores will occupy the ground floor, one of which will be used for showroom and office purposes, while the basement will be especially arranged for shop work and storing material. When the new building is completed Mr. Ohlmiller will retire from active business and the establishment of eighteen years' standing will be turned over to his son, Benjamin H. Ohlmiller.

Sayville, L. I., N. Y.—Jedlicka Brothers are installing new plumbing and heating systems in the million and a half dollar residence of F. G. Born at Oakdale. The house contains twenty-eight bathrooms. A vacuum cleaning system is also included in the work. The same firm will also install four new bathrooms in Henry McAleenan's residence in Center Moriches, and the plumbing and heating in a new residence at East Islip. To meet the growing necessity for better storage facilities the firm recently erected an addition to their present building. The new building is 130x20 feet and built so that each class of material is kept in a separate room with individual entrances. The building is a model of its kind; everything is conveniently arranged so that little time is lost handling goods. All light material such as sheet metal and pipe covering is kept on the second floor, and a model machine shop, fitted with up-to-date power-driven machinery for cutting and threading pipe, etc., is located at one end, where ample light enters the room through windows on three sides.

With the Makers

The Grip Coupling Company, of Springfield, Mass., is equipping a factory for the manufacture of its line of pipe couplings. The company states that the reception accorded its new union, which is unique in that no thread need be cut on the pipe ends to be connected, has been very gratifying.

The Dolph Valve Company, of Erie, Pa., has erected a commodious new factory 60x100 feet for the manufacture of its new line of locomotive check valves, gage cocks, blow-off cocks, etc. The officers of the company are: President, J. J. Bell; treasurer, J. M. Horner; secretary, J. R. Todd and general manager, G. T. Fox.

Just a card is all you care for—
Hidden, lonesome and unread,
Like a sign upon a tombstone
Telling folks that you are dead.
Wake up, man, and take a tonic,
Bunch your hits and make a drive,
Run a page, and change your copy,
Advertise and keep alive!
—"Montgomery (Mo.) Standard."

The New Way.

He: "Darling, all is over between us."
She: "Oh, George, this is so Abruzzi."—Punch.

Contemplated Work

Washington, D. C.—Sealed proposals will be received at the office of the Supervising Architect until 3 o'clock p. m., February 18, 1909, for the construction complete of the U. S. Post Office at Greenville, Miss., in accordance with the drawings and specification.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. February 15, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Shenandoah, Iowa, in accordance with drawings and specification.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. February 20, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Bar Harbor, Maine, in accordance with drawing and specifications.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. February 17, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Salisbury, N. C., in strict accordance with the drawings and specification.

In Defense of the Plumber

Charles P. Abel, president of the St. Louis (Mo.) Master Plumbers' Association, last week journeyed up to Kansas City, Mo., with a few of his friends in the plumbing trade. Their arrival in Kansas City caused a commotion owing to the fact that a rumor to the effect that Mr. Abel's salary was larger than that of the president of the steel trust, had preceded him. A reporter from the Kansas City Times was at once sent to the hotel to interview Mr. Abel, and this is the scroll he secured: "We knew when we came up here that some such rumor would be started," said Mr. Abel. "It doesn't make us mad—only sorrowful. Sometimes I doubt if it would not be better to let all such assertions go unchallenged. But justice ought to be maintained though the price of lead pipe falls. As a matter of fact, plumbers are the most underpaid class in the building trades. Did anybody ever hear of a plumber dying rich? I should say not. Look at me. I have been in the plumbing business all my life and I never died rich yet. On the other hand look at the people we work for, they are all rich. If bad times overtake a plumber he goes broke, doesn't he? Sure he does. But look at the owners of buildings for whom we do a job. If they get up against it, they've got enough lead pipe in the house to pay all their debts, ain't they? Just look at the facts—look at 'em. We pay a journeyman 65 cents an hour, and for at least two hours every day he's sitting around the shop waiting for somebody's bathtub to get the heaves. That's $1.30, a plumb loss—I mean a plumber's loss. When he finally goes out on a job we've got his car fare to pay and his time till he gets back—and most of 'em

carry stop watches. We get 90 cents an hour for his time and make 25 cents—when he works. That ain't profit; it's philanthropy. Yet when we get together once a year to figure up our losses people stand around and say we's making regulations governing the number of hours an apprentice shall be allowed to sleep in a bathtub before looking for the leak. People forget the strides that have been made in the plumbing trade. A few years ago the best houses had a sink in the kitchen and a hydrant in the back yard. Now every man that builds a house wants it fixed so he can push a button and get a Turkish bath. These things cost money, don't they? Unless the plumbing in a modern house amounts to 10 per cent of its cost that house isn't up to date, that's a cinch—a lead pipe cinch. Just because bricks and lumber and nails are not advanced by the same rapid strides that plumbing has, unreasoning people run away with the idea that we overcharge. The fact is, it's those rapid strides that do it. Improvements cost money. People want improvements, don't they? Well, then, let 'em pay for 'em—that's logic, isn't it? Does anybody kick about the cost of the navy? No, they know it's the best in the world. Same way with plumbing. America has the best navy and the best plumbing in the world, and America has to pay for 'em. Would America be content with less? No. And there you are."

Time, Place and Girl.

"Are you sure that he loves you, and you alone?"
"Oh, yes. More then than at any other time."

COPPER PRODUCTION IN 1908.

Statement by U. S. Geological Survey Shows Distinct Increase.

To the copper industry of the United States the year 1908 was a period of gradual recovery from the severe depression suffered in the last part of 1907. Many producers that had greatly curtailed or even suspended production in that year began again to increase output practically at the opening of 1908, and in spite of the low price of the metal nearly all the important producers of 1907 were in operation throughout most of 1908, and a few new companies began production during the year. The rate of production has been steadily increasing, and is now greater than at any other time in the history of the industry.

The production of copper in 1908 has been ascertained by L. C. Graton, of the United States Geological Survey, through personal interviews and telegraphic communication during the last days of the year. Except one small company, all producers of blister and lake copper have furnished their latest exact figures, in most cases for eleven months, together with estimates of their production for the remainder of the year. If these estimates are realized the production of blister and lake copper in 1908 from ores mined in the United States will be greater by about 50,000,000 pounds, or between five and six per cent, than that in 1907, which was 868,996,491 pounds. It is wholly impossible at this time to publish figures of state production that are reliable, but it may be stated concern-

SELL THE BEST

Establish a reputation as a RELIABLE heating contractor.

Sell the Best—the Boilers and Radiators that satisfy the owner.

CAPITOL BOILERS AND RADIATORS

Capitol Boilers are daily making good, because they were designed to meet every requirement for the best in steam and hot water heating.

Send for our catalog and post yourself on Capitol Boilers and Radiators.

GUARANTEED RATINGS

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

Branches:

DETROIT	139 Jefferson Ave.
NEW YORK	129 Worth St.
CHICAGO	34 Dearborn St.
KANSAS CITY	120 W. 11th St.
OMAHA	916 Farnam St.

Sales Agencies:

NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
ST. LOUIS, MO., L. M. Ramsey Manufacturing Co.
DENVER, COLO., Kellogg & Stokes Stove Co.

ing the three great copper-producing states that Arizona and Montana show large gains, and Michigan shows little change from 1907. Production of total refined new copper by works in this country cannot yet be given, but probably it will hardly equal the output of 1907, which was 1,032,516,247 pounds.

Based on records of the Bureau of Statistics covering the first eleven months, the 1908 imports of copper in pigs, bars, etc., are estimated at about 160,000,000 pounds, and in ore and matte at about 53,000,000 pounds. With addition for copper in pyrite not included above, the total imports may be estimated as equivalent to about 210,000,000 pounds refined copper, a decrease of about 13 per cent from 238,031,320 pounds in 1907. On a similar basis the exports of metallic copper are estimated at about 660,000,000 pounds, the largest ever recorded, and an increase of about 30 per cent over the 508,929,401 pounds exported in 1907.

Stocks of refined copper are still undoubtedly very large. Domestic consumption of new copper will show a decline from the 485,000,000 pounds of 1907. The average quoted price of electrolytic copper at New York for 1908 was 13.20 cents. The price at the close of the year was 14.18 cents.

The prospect is bright at the present for a still larger copper production in the year 1909, but it is evident that the principal producers will, more than in recent years gauge their operations by the consumption of the metal, which cannot at this time be safely forecasted.

Rather Remarkable Certainty.

The lawyer for the plaintiff had finished his argument, and counsel for the defense stepped forward to speak, when the new judge interrupted him. His eyes were wide open, and filled with wonder and admiration for the plea of the plaintiff.

"Defendant need not speak," he said. "Plaintiff wins."

"But, your honor," said the attorney for the defendant, "at least let me present my case."

"Well, go ahead, then," said the judge, wearily.

The lawyer went ahead. When he had finished the judge gaped in even greater astonishment.

"Don't it beat all!" he exclaimed. "Now defendant wins."—Green Bag.

Patents

909,170. Waste and Overflow Connection for Bath Tubs. John F. Eichenlaub, Columbus, O.

909,179. Gas-Meter-Connecting Device. Henry F. Gray and Frank E. Stevens, Columbus, O., assignors to the Standard Appliance Company, Columbus, O., a corporation of Ohio.

909,235. Boiler-Scale-Removing Apparatus. Adolph Schrör, Bremen, Germany.

909,311. Automatic Sprinkler Alarm and Indicator. Frank W. Milliken, Auburn, Me., assignor of one-half to Cheney C. Brown, Auburn, Me.

909,327. Water-Hydrant. George Payne and John Ross, Orillia, Ontario, Canada.

909,329. Combined Bath Tub and Cabinet. Carl W. Peterson, Minneapolis, Minn.

909,344. Sewer Pipe. Charles M. Stratton, Toronto, Ohio.

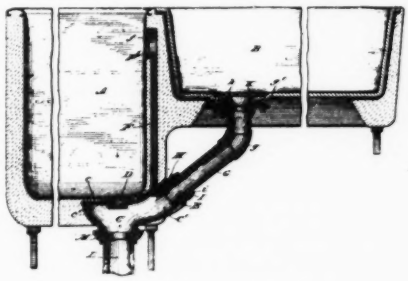
909,508. Safety Gas Burner. John H. Ahlgren, New York, N. Y

909,510. Valve. Edward V. Anderson, Monessen, Pa.

909,537. Flush Tank. Joseph O. Brousseau, North Hatley, Quebec, Canada.

909,574. Automatic Refilling Apparatus for Pressure Tanks. Thomas P. Ford and Thomas B. Ford, New York, N. Y.

909,392. Combined Washtub and Sink. Thomas N. Furlong, San Francisco, Cal. Eight claims are made for this invention, the first one being as follows: A combined washtub and sink composed of a body of suitable cement with a porcelain enameled sink em-



bedded in the cement at one side of the tub and a metallic chamber embedded in the cement of the tub bottom, said chamber having a pipe connection with the sink outlet and with a waste pipe, and an opening in its top to provide an outlet for the tub, so that both tub and sink discharge through said chamber into the same waste pipe.

909,638. Water Waste Preventer. Frederick J. Morgan, Claredene, Maidenhead, England.

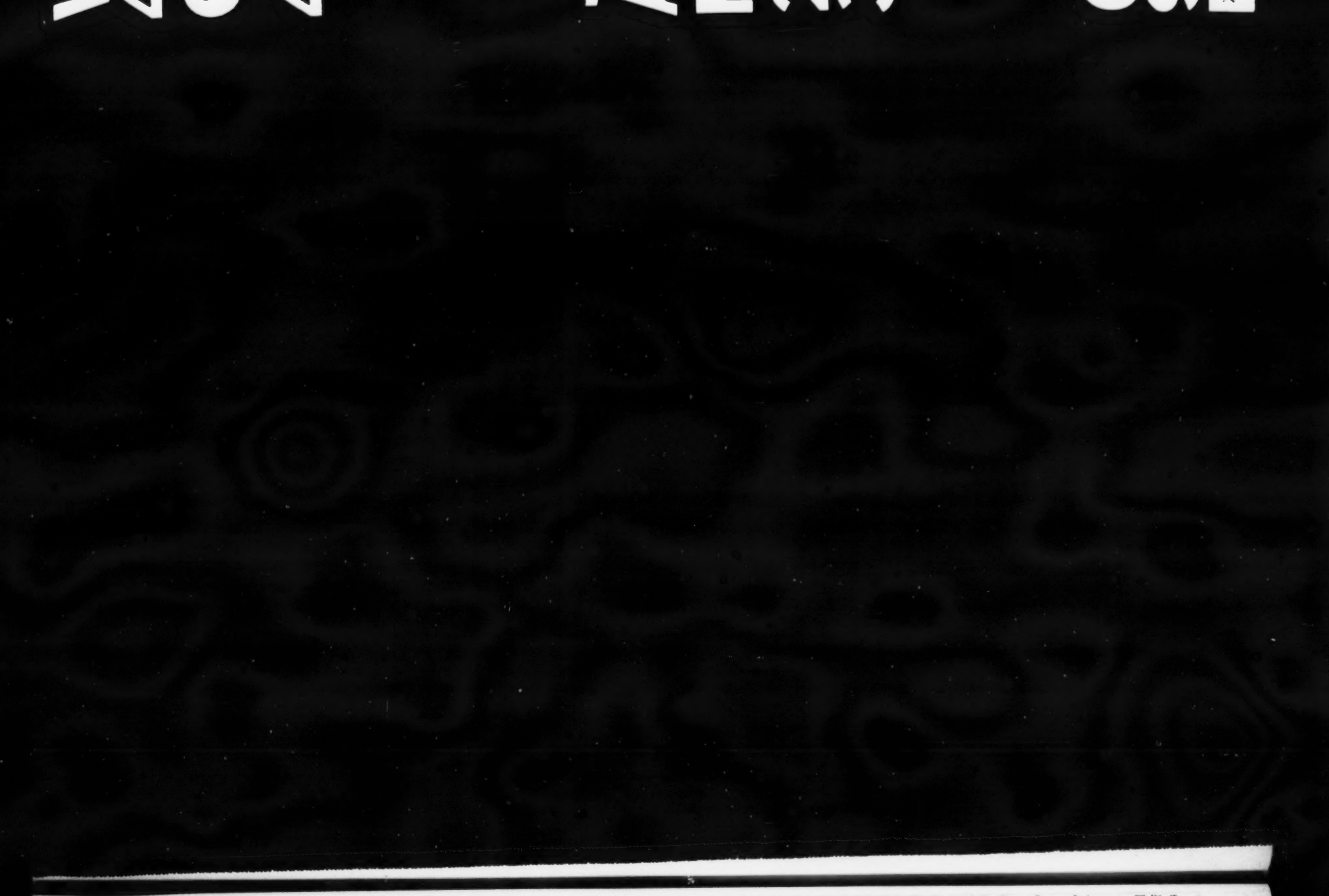
909,725. Ferrule for Pipes. John R. Williams, Milwaukee, Wis.

909,697. Balance Valve for Stand Pipes. William I. Short, Bluefield, W. Va., and William I. Cooley, Graham, Va.

909,737. Vapor Heating System. John De Witt Arnold, Philadelphia, Pa., assignor to Vapor Heating Company, Philadelphia, Pa., a corporation of Pennsylvania.

909,749. Adjustable Collapsing Tap. Frederick L. Brown and Isaac W. Sprink, Scottdale, Pa., assignors to Crescent Manufacturing Company, Scottdale, Pa., a corporation of Pennsylvania.

909,789. Flushing Tank. Henry S. Hawks, Colorado Springs, Colo.

39,756. Basin-Cock. Henry Mueller, Decatur, Ill., assignor to H. Mueller Manufacturing Company, Decatur, Ill., a corporation of Illinois.

Burlington, Iowa.—The Russell Sewage Disposal Company, of this city, has finished the installation of its sewerless sewage disposal system at Banker Dyson's handsome residence at Rushville, Ill.—Adv.